JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-J400E/EG

VHS
PAL

SPECIFICATIONS

GENERAL

Power requirement	: AC 220 – 240 V~, 50/60 Hz
Power consumption	: 19 W
Temperature	
Operating	: 5°C to 40°C
Storage	: –20°C to 60°C
Dimensions (WxHxD)	: 360 x 94 x 310 mm
Weight	: 4,3 kg
Format	: VHS PAL standard
Maximum recording time (SP)	: 240 min. with E-240 video cassette
(LP)	: 480 min. with E-240 video cassette

VIDEO/AUDIO

Signal system	: PAL-type colour signal and CCIR monochrome signal, 625 lines/50 fields
Recording system	: Rotary two-head helical scan system with slant double-azimuth combination video heads
Signal-to-noise ratio	: 43 dB (Rohde & Schwarz noise meter)
Horizontal resolution	: 250 lines
Frequency range	: 70 Hz to 10,000 Hz
Input/Output	: 21-pin scart connector
	: RCA connectors (input only)

TUNER/TIMER

Channel coverage	: VHF 47 – 89/104 – 300/ 302 – 470 MHz
	UHF 470 – 862 MHz
Aerial output	: UHF channel 36 (Adjustable 32 – 40)
Memory backup time	: Minimum 3 min.

ACCESSORIES

Provided accessories	: Aerial cable, Infrared remote control unit, "R6" battery x 2 AC power cord

Specifications shown are for SP mode unless otherwise specified.
Design and specifications subject to change without notice.

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

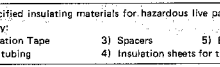


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

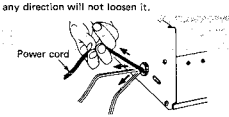


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

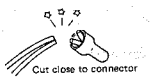


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

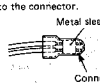


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

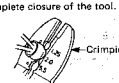


Fig. 6

(5) Check the four points noted in Fig. 7.

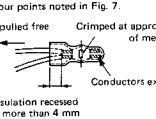

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. Dielectric strength test
Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. Clearance distance
When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

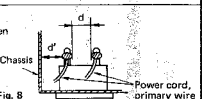


Fig. 8

4. Leakage current test
Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
Measuring Method: (Power ON)
Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts.
Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

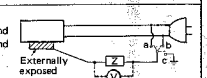


Fig. 9

5. Grounding (Class I model only)
Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
Measuring Method:
Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

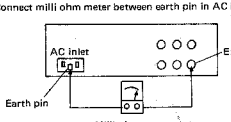


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R≧1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 1 kV 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R≧10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

INSTRUCTIONS (EXTRACT)

Safety Precautions

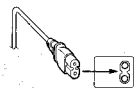
The rating plate and the safety caution are on the rear of the unit.

WARNING: DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

The OPERATE button does not completely shut off mains power from the unit, but switches operating current on and off.

This unit is produced to comply with Directives 75/889/EEC, 82/499/EEC, 87/308/EEC and Standard IEC Publ. 65.

CAUTION



- To avoid electric shock or damage to the unit, first firmly insert the small end of the AC power cord into the recorder until it is no longer wobbly, and then plug the larger end of the AC power cord into an AC outlet.
- When you are not using the recorder for a long period of time, it is recommended that you disconnect the power cord from the AC outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the AC outlet prior to connecting or disconnecting any signal lead or aerial.

WARNING
There are two different types of SECAM colour systems: SECAM-L, used in FRANCE (also called SECAM-West), and SECAM-B, used in Eastern European countries (also called SECAM-East).

1. This recorder can also receive SECAM-B colour television signals for recording and playback.
2. Recordings made of SECAM-B television signals produce monochrome pictures if played back on a video recorder of SECAM-L standard, or do not produce normal colour pictures if played back on a PAL video recorder with SECAM-B system incorporated (even if the TV set is SECAM-compatible).
3. SECAM-L prerecorded cassettes or recordings made with a SECAM-L video recorder produce monochrome pictures when played back with this recorder.
4. This recorder cannot be used for the SECAM-L standard. Use a SECAM-L recorder to record SEMAN-L signals.

IMPORTANT:
- It may be unlawful to record or play back copyrighted material without the consent of the copyright owner.
- Please read the "Precautions" section of this instruction manual before installing or operating the recorder.

Video tapes recorded with this video recorder in the LP (Long Play) mode cannot be played back on a single-speed video recorder.

VHS HQ

- Only cassettes marked "VHS" can be used with this video recorder.
- HQ VHS is compatible with existing VHS equipment.

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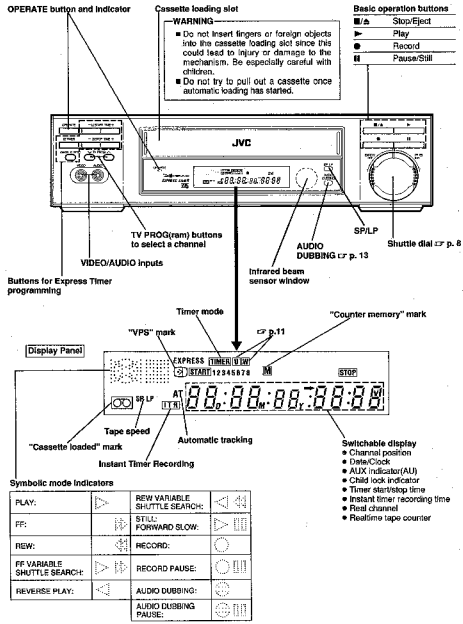
Controls And Indicators

Front Panel



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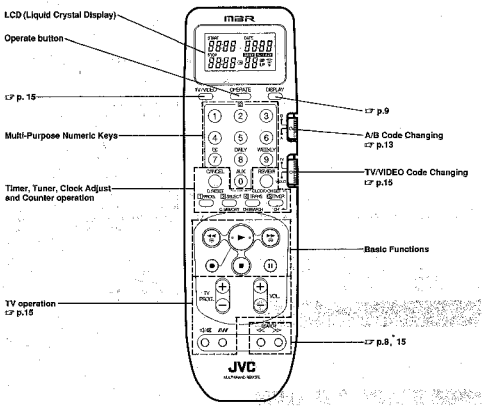
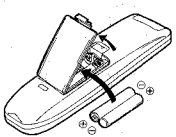
Controls And Indicators (cont'd)

Wireless Remote Control



Installing Batteries

1. Open the battery compartment cover.
2. Insert 2 "R6"-size batteries (provided) in the correct directions.
3. Replace the cover.

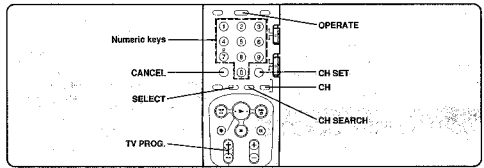


How To Use

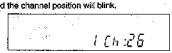
The remote control can operate most of your video recorder's functions, as well as basic functions of TV sets of JVC and other brands. ☞ p. 15.

- Point the remote control toward the sensor window.
- The maximum operating distance of the remote control is about 8 m.

Setting The Tuner



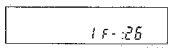
1. **Press OPERATE.**
2. **Press CH SET.**
3. **Press CH SEARCH to start automatic scanning for receivable channels.**
   - Automatic scanning stops when a broadcast is detected, and the channel position will blink.



Ch = Regular CC = Cable

- If you don't want to store the broadcast detected, simply press CH SEARCH to continue automatic scanning.

4. **Press SELECT to fine-tune the channel, if necessary.**
   - When the picture is clear, proceed to step 7.
5. **Press TV PROG. +/– so that the picture becomes clear.**



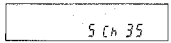
6. **Press SELECT.**
7. **Press numeric keys or TV PROG. to select the channel position where you wish to store that broadcast.**
8. **Press CANCEL to store the channel.**
   - The colon will disappear.
9. **Repeat steps 3 through 8 for other receivable channels.**

NOTE:

- Be sure to proceed to the next step with 60 seconds, otherwise the Channel Set mode will be cancelled automatically. If this happens and you wish to continue channel setting, press CH SEARCH again. Channel scanning will resume, beginning with the next receivable channel.

TO DELETE STORED CHANNELS

1. Press TV PROG. to select the channel position you want to skip.
2. Press CH SET.



3. Press CANCEL.

- Channel position 5 can no longer be chosen by TV PROG. buttons.

TO STORE NEW CHANNELS

1. Press CH SET.
2. Press CH.
   - Real channel starts blinking.
3. Press CH to change the band between Ch and CC, if necessary.
4. Press numeric keys to input the number of the real channel you want to store.
5. Press numeric keys to input the number of a vacant channel position.
6. Press CANCEL to store the channel.

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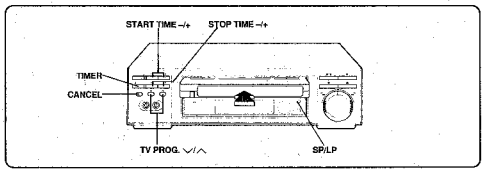


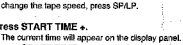
The "Express Timer" is the quickest method of programming your video recorder's timer. TV shows to be broadcast within 24 hours can be programmed for automatic recording simply by pressing three buttons (conveniently numbered) on your recorder's control panel.

TIMER PROGRAMMING IS NOT POSSIBLE UNLESS THE CLOCK HAS BEEN SET.

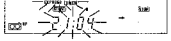
Preparation

Insert a cassette with the safety tab in place.
- The recorder power will come on automatically.
- The display panel will show the channel being received.
- To change the channel, press TV PROG.
- To change the tape speed, press SP/LP.

1. **Press START TIME +.**
   - The current time will appear on the display panel.
2. **Press START TIME +/– to set the start time.**
   - START TIME + (STOP TIME +) advances the time and START TIME – (STOP TIME –) reverses the time.
   - Press briefly to change by 1 minute. Hold the button down to change by 30-minute increments.



   - After the start time is set, the date (today or tomorrow) and channel will be displayed for 3 seconds.
3. **Press STOP TIME +.**
   - The start time will be transferred over to the stop time position.
4. **Press STOP TIME +/– to set the stop time.**



5. **Press TIMER.**
   - The recorder will enter the Timer mode and power will go off.

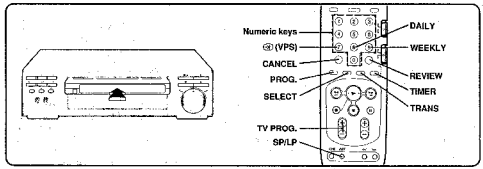
TO CANCEL THE PROGRAM

While timer programming, press CANCEL.
- Pressing CANCEL again disengages the Timer Program mode.

TO CHECK PROGRAMMED SETTINGS

While in the Timer mode, press START TIME + to check the settings you have programmed. DO NOT press START TIME + while the Timer mode is cancelled because this will clear the programmed data for a new entry.

To use the recorder after setting to the Timer mode, ☞ p.11

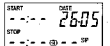


The LCD timer programming lets you input all necessary settings at the remote control and transfer them to your recorder at the touch of a button.

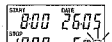
Preparation

Insert a cassette with the safety tab in place.
- The recorder power will come on automatically.

1. **Press PROG.**
2. **Press numeric keys to input the date.**



   Ex.: For 26th May, press 2 6 0 5.
3. **Press numeric keys to input the start time, stop time and channel.**



   Ex.: For 6:00, press 0 8 0 0.

   WEEKLY program: After inputting the channel, press numeric key "9".

   DAILY program: After inputting the channel, press numeric key "8".
   - Normally, you should leave (8) on so you can take advantage of VPS recording*. If you wish to cancel VPS, press (0) (the numeric key "7").
4. **Press SP/LP to select the tape speed.**
5. **Press TRANS with the remote control directed to the recorder's Remote Sensor window.**
6. **Press TIMER.**
   - The recorder will enter the Timer mode and power will go off.

*"E" version models have no VPS capability. If your recorder is an "E" model, please disregard all references to VPS.

TO MAKE CORRECTIONS

- During steps 2 and 3, press CANCEL to backspace and input new data.
- After setting the channel in step 3, press SELECT to make the item you want to change blink, and input new data.
- Pressing PROG. clears the programmed data.

TO CHECK, CANCEL AND REPLACE PROGRAMS

To check preset programs:
1. Press REVIEW until the program settings are displayed on the display panel.
   - Program 1 is displayed with the number blinking.
2. Press SELECT to review the program contents in succession.
3. To check another program, press REVIEW again.

To cancel the program:
4. Press CANCEL.
   - You can press CANCEL at any stage while the program is open.

To replace a program:
5. Use the SELECT and TV PROG. buttons to input new data.

TO USE THE RECORDER AFTER SETTING TO THE TIMER MODE

For safety, your recorder disables all other functions while in the Timer mode.
- Press TIMER to disengage the Timer mode.
- To re-engage the Timer mode, press TIMER.

Timer-Recording (cont'd)

Error Indications

The following error indications may appear on the recorder when you press the TIMER button to engage the Timer Standby mode. Here's why, and what you should do.

■ "TIMER" and "CTR" on the display panel continue blinking.
WHY: There is no cassette in the recorder.
WHAT TO DO: Insert a cassette.

■ The cassette is automatically ejected. "TIMER" and "CTR" continue blinking.
WHY: The inserted cassette has its safety tab removed.
WHAT TO DO: Insert a cassette with its safety tab intact. Or cover the safety tab hole of the cassette with adhesive tape and reinsert it. ☞ p.6.

■ "TIMER" blinks for 10 seconds and the Timer Standby mode is cancelled.
WHY: There are no preset programs in memory, or they have all been incorrectly preset.
WHAT TO DO: Check the programmed data and re-program it as necessary. Press TIMER again.

Other Indications

■ "TIMER" steady lit (with clock display).
WHY: The recorder is in the Timer Standby mode. This is the normal display you should see when you press the TIMER button.

■ " ○ " and "TIMER" steady lit
WHY: Normal display while timer-recording is in progress.

■ The cassette was ejected, with power off and "TIMER" and "CTR" are blinking.
WHY: This means that the end of the tape was reached while timer-recording was in progress. Therefore, the preset program may not be recorded in its entirety.

■ "0:00" blinking.
WHY: This means the clock must be set. It's displayed when time-keeping is terminated due to a power failure or because the recorder's power plug was pulled from the AC outlet.
WHAT TO DO: Set the clock. ☞ p.6.
■ If power was interrupted, it's also likely that all preset timer programming data has been erased. Please check and re-program as necessary.

■ "– – – – – –" is displayed for about 5 seconds when the TRANS button is pressed.
WHY: Data was not successfully transferred. The program may have been incorrectly preset, or the recorder's clock has not been set, or all the recorder's timer programs (1 – 7) are preset.
WHAT TO DO: Check the LCD program, and re-program as necessary. Transfer the correct data. Or cancel unnecessary programs, and transfer again.

Other Functions

Repeat Playback

During Playback:
1. Press Play for more than 5 seconds, and release.
   ■ The Play indicator (▷) on the display panel will blink slowly.
   ■ The tape will be played 20 times automatically, and then stop.

Counter Memory

During Playback:
1. Press DISPLAY until a counter reading appears on the display panel.
2. Press C.RESET at a point you wish to locate later.
   ■ The counter will read "0:00:00".
3. Press C.MEMORY.
   ■ The M indicator will light on the display panel.
4. When you wish to return to that point, press Stop and then Rewind.
   ■ The tape will rewind and stop at about "0:00:00" automatically.
5. To cancel the Counter Memory mode, press C.MEMORY again.

Next Function Memory

For automatic start of playback after the tape is rewound:
1. Press Rewind.
2. Press Play within 2 seconds.

For automatic power off after the tape is rewound:
1. Press Rewind.
2. Press OPERATE within 2 seconds.

For automatic timer standby after the tape is rewound:
1. Press Rewind.
2. Press TIMER within 2 seconds.

Locking The Recorder's Controls

To avoid unwanted operation and prevent accidental recording...
1. Press the remote control's OPERATE button to turn the recorder's power off. Keep this button pressed for about 2 more seconds after the power LED indicator has gone off.
   ■ The Child Lock indicator (–) will appear on the display panel.
2. Child Lock is cancelled when you switch the recorder's power on with the remote's OPERATE button.
   ■ Pressing the TIMER button during timer-recording also cancels the Child Lock mode.

NOTES:
■ While Child Lock is engaged, make sure you keep your remote control in a safe place inaccessible to children.
■ Timer-recording is possible in the Child Lock mode. After timer-recording is done, Child Lock remains in effect.

Remote A/B Code Switching

The remote control is capable of controlling two JVC video recorders independently; one set to respond to your remote control's A code control signals and another set to respond to B code control signals. The remote control is preset to send A code signals because your video recorder is initially set to respond to A code signals. You can easily modify your video recorder to respond to B code signals.
1. Unplug the recorder's power cord from the AC outlet.
2. Set the A/B CODE switch to B.
3. Plug the power cord back into the AC outlet. Do not use other remote controls at this stage.
4. Turn the recorder power on using the remote control's OPERATE button. The recorder will now only respond to B code signals.

NOTE:
Some TV sets may malfunction in response to the B mode. If this happens switch back to the A mode.

VPS Recording ("EG" Version Only)

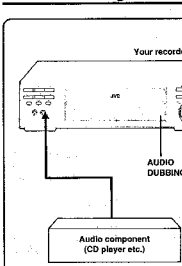
Available from some TV stations, VPS (Video Program System) is a service which assures accurate timer recording. Special code signals are transmitted so your recorder starts and stops recording when the preset TV programmes actually start and end — even if there is a schedule change. If your video recorder is an "EG" model, a VPS decoder is built-in. With "E" models, VPS recording is not possible. The following applies to "EG" models only.

TO USE VPS SERVICE
■ You do not have to cancel "VPS" even for non-VPS programmes, because those programmes will be recorded at the preset times.
■ If you wish to cancel "VPS", press the ⑪ button (the numeric key "7") on the remote control just before transferring the programmed data to the recorder. The ⑪ mark on the LCD will go out.

To Watch A Compact VHS Tape

Compact VHS camcorder recordings (PAL) can be played on your video recorder. Place the recorded cassette into a C-P6 Cassette Adapter and it can be used like any full-sized VHS cassette.

Audio Dubbing



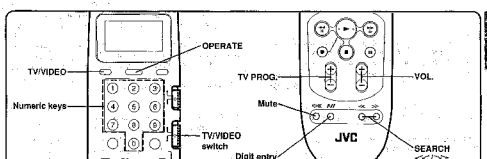
Audio dubbing replaces the audio sound of a previously recorded tape with a new soundtrack.

Preparation
Connect an audio component to the recorder's front panel AUDIO input connector.

1. Select the recorder's external input mode by pressing numeric key "0". "AU" will appear instead of a channel number.
2. Start playback and engage the Still mode at the point from which you wish to start audio dubbing.
3. Press AUDIO DUBBING.
4. Start playback of the audio source, and then press PLAY.
   ■ Audio dubbing will start.
5. Press PAUSE/STILL to stop audio dubbing temporarily.
6. Press STOP to stop audio dubbing.

NOTES:
■ Audio dubbing will stop automatically at the counter reading of "0:00:00", and the recorder will enter the Play mode. Check the counter before starting audio dubbing.
■ Connections made to the front panel Video and Audio input automatically override the rear panel AUDIO/VIDEO input connection.

Using The Remote Control For TV Operation



TV Code Setting

Your remote control can operate the basic functions of your TV set. In addition to JVC televisions, other manufacturers' televisions listed on the right can also be controlled by setting the remote control to "TV". If your television is a JVC (Code 1), you don't have to set the TV code in step 2.

1. Set the TV/VIDEO switch to "TV".
2. While holding down the OPERATE button, press the numeric keys corresponding to the code number for your TV's brand.
   - Press OPERATE to turn the TV power on.
   - Press TV/VIDEO to switch the TV between TV and VIDEO (or AV) mode.
   - Press TV PROG. to select the TV's channel.
   - Press VOL. to adjust the TV's sound volume.
   - Press Mute to mute the TV's sound.
3. To operate your recorder, set the TV/VIDEO switch back to "VIDEO".

NOTE:

- The TV PROG. button does not function with televisions using Code 2.
- The TV/VIDEO button does not function with televisions using Code 3.
- With some televisions, the OPERATE button functions only to turn the TV power off, and the TV/VIDEO button functions only to switch the TV to the VIDEO (AV) mode.
- Whenever you replace batteries in the remote control, it is necessary to re-set the TV code if your television is not a JVC TV.

IMPORTANT

Although the provided remote control unit is compatible with JVC televisions, as well as many TV models manufactured by others, it is possible that the provided remote control will not work with your TV, or in some instances, will have limited function capability.

CODE	TV BRAND NAME
1	JVC
2	BRANDT, NORDMENDE, SABA, TELEAVIA, TELEFUNKEN, THOMSON
3	FERGUSON
4	PHILIPS
5	BLAUPUNKT, GRUNDIG
6	SONY
7	PANASONIC
8	PANASONIC
9	GRAETZ, ITT, LUXOR, SALORA, SELECO

To Control Your Television With Additional Buttons

The numeric keys can also be used to select the TV's channel by setting the remote control to the TV mode.

1. Set the TV/VIDEO switch to "TV".
2. Use the numeric keys and the Digit entry button or the SEARCH <</>> buttons to select the TV's channel.
   - With televisions using Code 1, 3, 4, 6, 7 or 8 the Digit entry button corresponds to the 1-digit/2-digit entry switching button (often labelled -/--) of your TV's remote control.
   - With televisions using Code 1, 5 or 0, the SEARCH >> button corresponds to the 10 + button, and the SEARCH << button, to the 20 + button of your TV's remote control.

NOTE:

The way these buttons are used is determined by your TV. Use these buttons as instructed for your TV's remote control.

Precautions

Please follow these safety precautions. Not doing so may result in damage to the recorder, remote control, or video cassette.

- **Avoid extreme heat and direct sunlight.**
- **Avoid extreme cold.**
- **Avoid extreme humidity.**
- **Avoid dust.**
- **Avoid places subject to vibrations.**
- **Avoid strong magnetic fields.**
- **Do not block the recorder's ventilation openings.**
- **Do not place anything heavy on the recorder or remote control.**
- **Do not place anything which might spill on top of the recorder or remote control.**
- **Do not place the recorder on cushions, pillows, or thick carpeting.**
- **Use the recorder in a stable, horizontal position only.**

Beware of moisture condensation

Moisture in the air will condense on the recorder when you move it from a cold place to a warm place, or under extremely humid conditions — just as water droplets form on the surface of a glass filled with cold liquid. Moisture condensation on the head drum will cause damage to the tape. In conditions where condensation may occur, keep the recorder's power turned on for a few hours to let the moisture dry.

When transporting

- Be sure to remove cassette from recorder before packing.
- Avoid violent shocks to the recorder during packing and transport.

Place cassettes in cassette cases and store vertically.

ATTENTION:

This recorder contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the power off and unplug the power cord. Then plug it in again and switch on. Take out the cassette. After checking the cassette, operate the unit as usual.

Special Note On Head Cleaning

Accumulation of dirt and other particles on the video heads may cause the playback picture to become blurred or interrupted. Although this model is equipped with a built-in head cleaner which automatically cleans the heads, reducing the likelihood of dirty heads, if such troubles are encountered please consult the nearest JVC dealer.

Auto Head Cleaner

A built-in head cleaner automatically cleans the video heads and head drum whenever a tape is loaded or unloaded to reduce head clogging.

Specifications

GENERAL

Power requirement	:	AC 220 – 240 V~, 50/60 Hz
Power consumption	:	19 W
Temperature		
Operating	:	5°C to 40°C
Storage	:	–20°C to 60°C
Dimensions (WxHxD)	:	360 x 94 x 310 mm
Weight	:	4.3 kg
Format	:	VHS PAL standard
Maximum recording time (SP)	:	240 min. with E-240 video cassette
(LP)	:	480 min. with E-240 video cassette

VIDEO/AUDIO

Signal system	:	PAL-type colour signal and CCIR monochrome signal, 625 lines/50 fields
Recording system	:	Rotary two-head helical scan system with slant double-azimuth combination video heads
Signal-to-noise ratio	:	43 dB (Rohde & Schwarz noise meter)
Horizontal resolution	:	250 lines
Frequency range	:	70 Hz to 10,000 Hz
Input/Output	:	21-pin scart connector
	:	RCA connectors (input only)

TUNER/TIMER

Channel coverage	:	VHF 47 – 99/104 – 300/ 302 – 470 MHz
		UHF 470 – 862 MHz
Aerial output	:	UHF channel 36 (Adjustable 32 – 40)
Memory backup time	:	Minimum 3 min.

ACCESSORIES

Provided accessories	:	Aerial cable, Infrared remote control unit, *R6 battery x 2, AC power cord

Specifications shown are for SP mode unless otherwise specified.

Design and specifications subject to change without notice.

SECTION 1
DISASSEMBLY

1.1 DISASSEMBLY

1.1.1 Top cover

1. Take out 4 screws Ⓐ and a screw Ⓑ.
2. To remove the top cover, slide in direction of arrow and lift away.

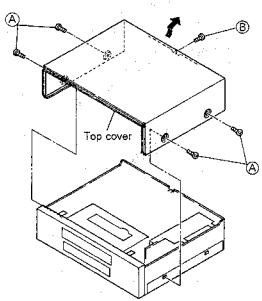


Fig. 1-1-1 Top cover

1.1.2 Front panel assembly

1. Remove the top cover.
2. Carefully disengage 2 tabs ⓐ of the front panel assembly from the upper side of the chassis.
3. Pull the front panel assembly forward you to disengage 3 tabs ⓑ of the front panel assembly from the bottom of the chassis, then remove the front panel assembly.

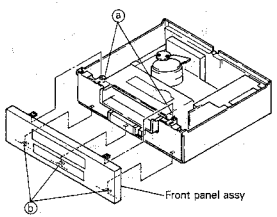


Fig. 1-1-2 Front panel assembly

1.1.3 Bottom cover

1. Remove the top cover.
2. Disengage 7 claws ⓐ from the bottom of the chassis.
3. Disengage the bottom cover from the bottom of the chassis.

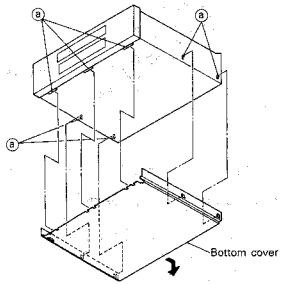


Fig. 1-1-3 Bottom cover

1.1.4 SWITCHING REGULATOR board assembly

1. Remove the top cover.
2. Take out 2 screws Ⓒ and 2 screws Ⓓ.
3. Disengage the tab ⓐ in direction of arrow,and remove the SWITCHING REGULATOR board assembly.

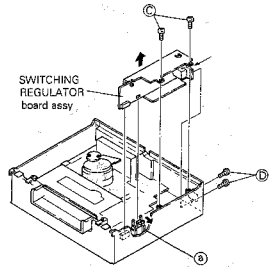


Fig. 1-1-4 SWITCHING REGULATOR board assembly

1.1.5 FRONT board assembly

1. Remove the top cover and front panel.
2. Disengage 4 claws (a) from the chassis.
3. Disengage 3 claws (b), then remove the FRONT board assembly in direction of arrow.

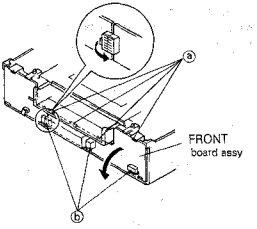


Fig. 1-1-5 FRONT board assembly

1.1.6 Cassette housing assembly

1. Remove the top cover and front panel.
2. Take out 4 screws (F) and 2 screws (M).
3. Remove the cassette housing assembly in direction of arrow.

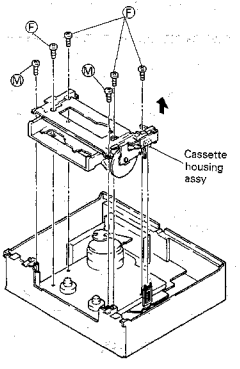


Fig. 1-1-6 Cassette housing assembly

1.1.7 PRE/REC board assembly

1. Remove the top cover.
2. Take out 2 screw (G).
3. Disconnect connectors CN502 from the PRE/REC board assembly.
4. Remove the PRE/REC board assembly with the shield in direction of arrow.

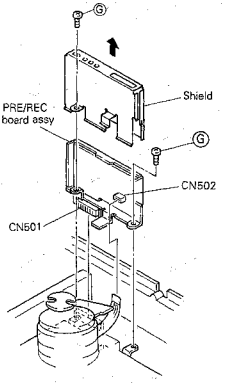


Fig. 1-1-7 PRE/REC board assembly

1.1.8 Drum assembly

1. Remove the top cover.
2. Remove the inertia plate, washer and head cleaner assy, then disconnect a connector.
3. Take out 3 screws (L).

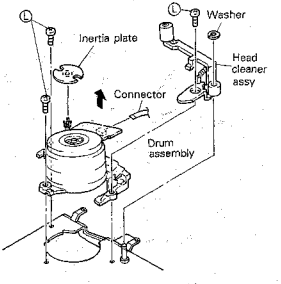


Fig. 1-1-8 Drum assembly

1.1.9 Cassette housing installation

Note: ***Observe the mechanical phase and position (see figure) when installing the cassette housing assembly. If these are incorrect, the system will not operate properly even when tape is inserted.***

1. Check that the marks of the control cam and pinch roller cam are aligned. If necessary, turn the worm clutch by hand to adjust the position.

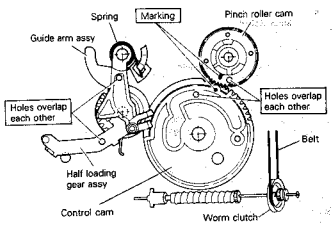


Fig. 1-1-9 Control cam and pinch roller cam position

2. Confirm that the clutch of the worm clutch assembly is locked. If necessary, engage the locked.

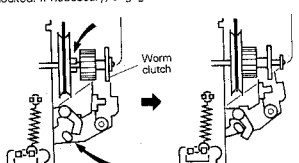


Fig. 1-1-10(a) Not locked **Fig. 1-1-10(b)** Lock engaged

3. Install the front panel as shown in Fig. 1-1-11 and re-engage the tabs. Supply power and use a spare cassette to check for normal loading and eject operations.

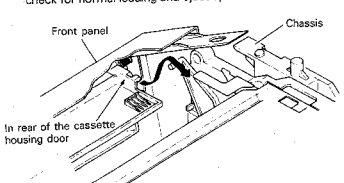


Fig. 1-1-11 Cassette housing door

1.1.10 Main deck assembly

1. Remove the top cover, front panel and cassette housing assembly.
2. Take out 1 screw (J) and disengage 3 connectors (a) from the chassis.
3. Remove the main deck assembly in direction of arrow.

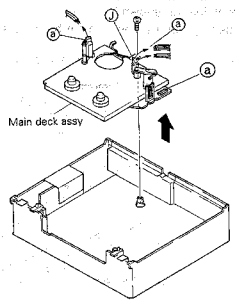


Fig. 1-1-12 Main deck assy

1.1.11 MAIN board assembly

1. Remove the top cover.
2. Take out 2 screws (K) and disengage 2 claw (a) from the chassis.
3. Remove the MAIN board assembly in the direction of arrow.

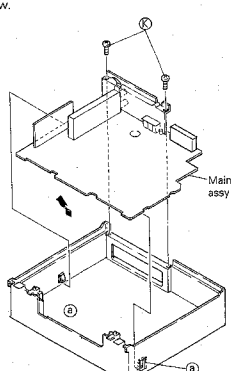


Fig. 1-1-13 Main board assy

1.1.12 Service position

1. Remove the mechanism assembly (including cassette housing assembly), main board assembly, switching regulator assembly and display/switch board assembly out of the chassis.
2. Re-connect all connectors, then overturn the mechanism assembly and board assemblies, as shown fig. 1-1-14.
3. Check the pattern side of main board assembly.

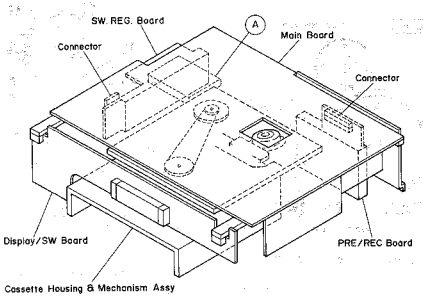


Fig. 1-1-14

SECTION 2
MECHANISM ADJUSTMENT

2.1 PREPARATION

2.1.1 Precautions

1) Disconnect VCR from AC power before soldering.
2) Avoid imparting stress to wires when disengaging connectors.
3) Determine and correct the cause of difficulty before proceeding to adjustments. Do not disturb settings unnecessarily.
4) Use care not to damage tabs, claws, etc. during repairs.
5) Install the cassette housing assembly only when the mechanism is in the Eject or Stop mode position. In the Eject mode, the internal holder of the housing is fully raised. This is fully lowered in the Stop mode.
6) When installing the front panel assembly, be sure to engage the housing door with the door lever of the cassette housing assembly. If this is omitted, the door will not open at Eject and the cassette cannot be removed.
See Sec.1 DISASSEMBLY.

2.1.2 Check without cassette housing

Mechanism operations can be observed easily by removing the cassette housing assembly. Note the following.
1) Disable the photo transistor sensor (END SENSOR) on the main-deck by applying an opaque cover.
2) Connect pins 2 and 3 of Main board connector CN601.
3) Select the desired modes with the operation buttons. However, notice that without tape, setting for the reverse direction modes produces the Stop mode after a few seconds due to absence of the reel sensor output.

2.1.3 Manual removal of loaded tape

In event of failure which leaves the tape in the loaded position, remove it by the following procedure.
1) Take off the top cover and main deck assy in order to wind the tape on the reel.
See Sec.1 DISASSEMBLY.
2) Turn the mode motor belt by hand in the unloading direction to return the loading posts to the stop position, refer Fig. 2-1-1.

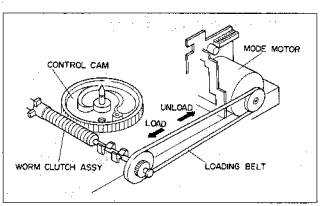


Fig. 2-1-1

3) From the bottom, turn the clutch unit by hand to wind the slackened tape onto the reel.

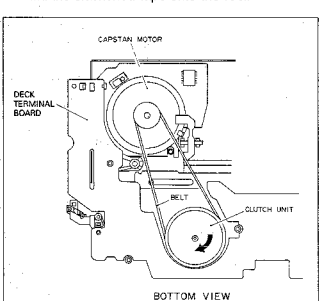


Fig. 2-1-2

4) Turn the mode motor further to where the cassette holder begins moving in the unloading direction, then remove the cassette tape.

Note: *Turn the mode motor and clutch unit alternately in order to avoid damaging the tape. It is important to avoid scratching the tape in the mechanism.*

2.1.4 Test equipment

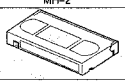
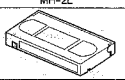
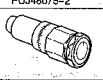
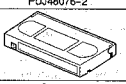
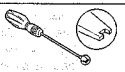
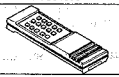
Alignment tape (SP) MH-2	Alignment tape (LP) MH-2L	Torque gauge PUJ46075-2	Back tension cassette gauge PUJ46076-2
			
A/C head positioning tool PTU94010	**Roller driver PTU94002**	**Presetting unit PTU94008**	**Grease PTU94014A**
			

Table 2-1-1

2.2 MAIN MECHANISM PARTS

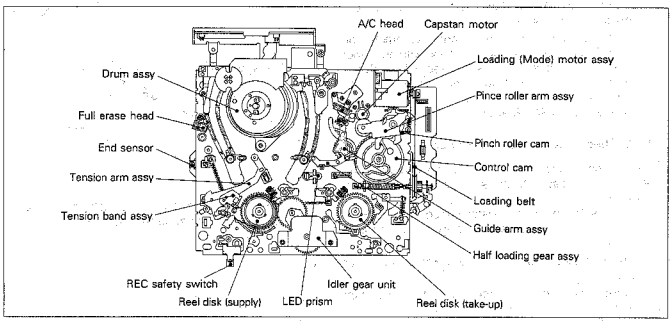


Fig. 2-2-1 Top view of main-deck

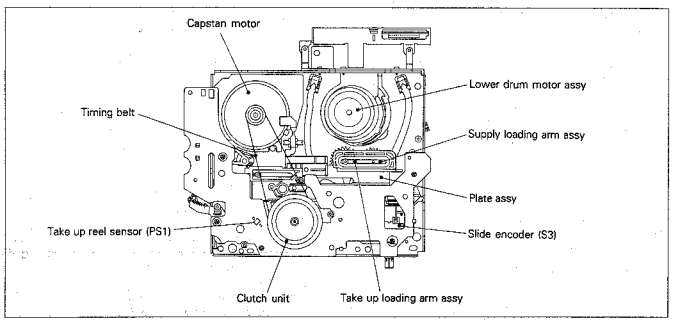


Fig. 2-2-2 Bottom view of main-deck

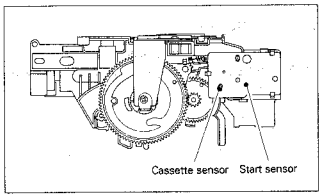


Fig. 2-2-3 Side view of cassette housing

2.2.1 Cleaning

Periodic cleaning of the tape transport system is desirable, but ordinarily not feasible in practice. Therefore, perform cleaning when a set is brought in for repairs or maintenance. Contamination of the video heads, tape guides and brushes can detract from playback picture quality and in extreme cases, even damage the tape. For cleaning, use a fine-mesh cotton cloth (about the texture of a white dress-shirt) moistened in alcohol.

- To clean the video heads, press the moistened cloth gently against the upper drum with finger-tip and turn the drum by hand.
- Do not use a vertical stroke, as this may damage the heads.

2.2.2 Lubrication

Oil and grease do not normally require periodic replenshing. Apply only when replacing lubricated parts (also clean and replace lubrication of mating parts if soiled).
For parts and points to apply oil and grease, refer to the exploded views of the mechanism assembly.
Before oiling, clean with alcohol.
Apply one or two drops of oil.
Avoid excess oil.

1) Table 2-2-1 indicates the oil and grease used in this set. Use these or recommended locally available equivalents.

Category	Part No.
Oil	COSMO-HV56
Grease	KANTO-G-31KAV

Table 2-2-1

2) Grease is not required for a replacement cassette housing assembly, as this has been applied at the factory.

Note: *Stir grease that has been stored for an extended period.*

2.3 INSPECTION AND MAINTENANCE

This product employs rotary and moving parts which wear out in the course of usage. Periodic inspection, cleaning, lubrication and maintenance are therefore important for ensuring maximum performance. Worn parts must also be replaced at when required.

2.3.1 Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning, lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions. However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary.
Also note that rubber parts may deform in time, even if the set is not used.

System	Parts Name	Operation hours						
		250	500	750	1000	1250	1500	2000
Tape Transport	Upper drum assy	★	★	★	○	★	○	○
	A/C head	★			○			○
	Pinch roller arm assy	★	★	★	★	★	★	★
	Full erase head							
	Tension arm assy							
	Lower drum assy							
	Capstan motor (Shaft)							
	Half loading gear assy							
	Guide arm assy							
Drive	Capstan motor							○
	Loading belt			○				○
	Mode motor assy			○				○
	Reel disk (Supply)			○				○
	Reel disk (Take-up)			○				○
	Clutch assy			○				○
	Worm clutch assy							○
	Plate assy							○
Others	Brush assy			○				○
	Tension band assy			○				○

★ : Cleaning
○ : Inspection or Replacement if necessary

Table 2-3-1

2.4 MAIN PARTS REPLACEMENT AND ADJUSTMENT

2.4.1 Stator assembly

1) Take out 2 screws (A).
2) Raise the Stator Assembly in the direction indicated by the arrow to remove it (also remove the Inertia Roller).
3) Remove the flat cable.
4) To reinstall, first secure the flat cable, then insert 2 screws (A).
5) After reinstalling, be sure to perform switching point adjustment.

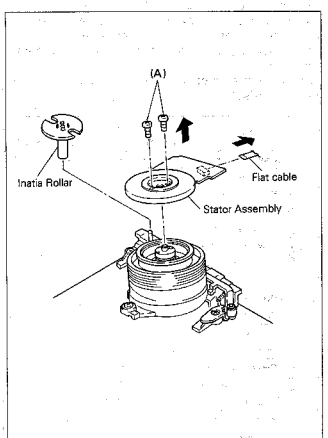


Fig. 2-4-1

2.4.2 Rotor assembly

1) Remove the Stator Assembly.
2) Take out 2 screws (B) and remove the Rotor Assembly.

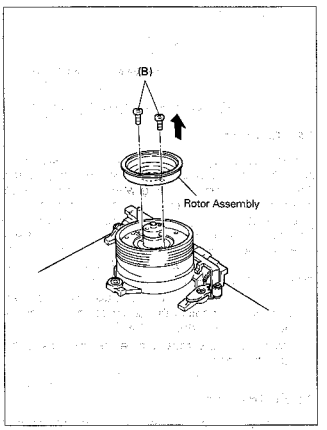


Fig. 2-4-2

Note: *A normal picture will not be obtained unless the phase is properly aligned when installing the Rotor Assembly. Also note there are three types of Rotors.*

3) Align the Upper Drum and Rotor Assembly phase as indicated in Fig. 2-4-3.
4) Overlap holes (a) of the Upper Drum with holes (b) of the Rotor Assembly (align holes in 3 locations) and secure with 2 screws (B) (see Fig. 2-4-3).

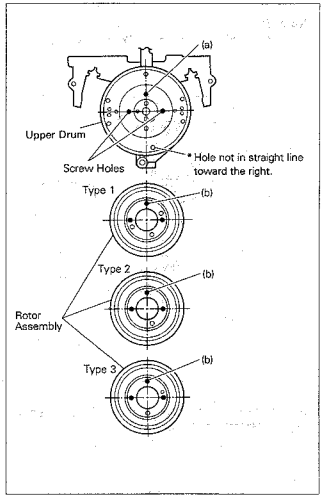


Fig. 2-4-3

2.4.3 Drum subassembly

1) Remove the Washer and Head Cleaner Assembly.
2) Disengage the PRE/REC AMP board connector and flat cable.
3) Take out 3 screws (C) and remove the Drum Subassembly.

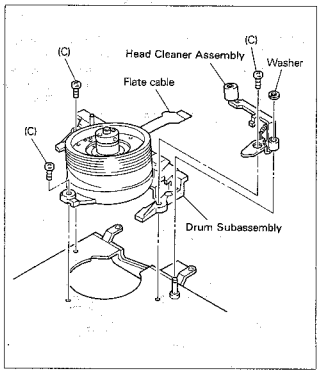


Fig. 2-4-4

2.4.4 Upper Drum assembly

1. Removal

1) Remove the Stator and Rotor Assemblies.
2) Use a 1.5 mm hexagonal wrench to loosen the Collar Assembly screw and remove the Collar Assembly.
3) Remove the Upper Drum Assembly and use tweezers to remove the Washer.

Note: *As grease is applied to the Brush, use care to avoid contamination by dirt or other foreign matter. If the Brush is replaced, use care regarding top and bottom direction and be sure to apply the specified grease (PTU94014A) to the contact sections (2 locations).*

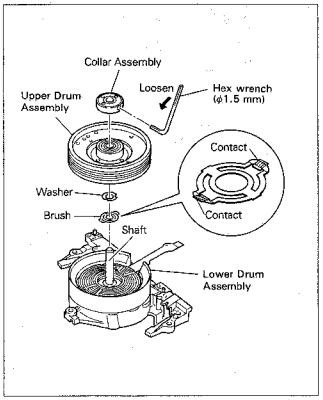


Fig. 2-4-5

2. Installation

1) Use an air brush to clean the Lower Drum Assembly and the coil section of the new Upper Drum Assembly.
2) Set a new Washer on the Drum shaft (see Fig. 2-4-6).

Note: *Be sure to use the new Washer supplied with the replacement Upper Drum Assembly.*

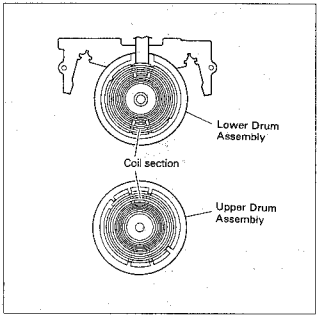


Fig. 2-4-6

3) Note the top and bottom of the Collar Assembly and determine the position as indicated in Fig. 2-4-7.

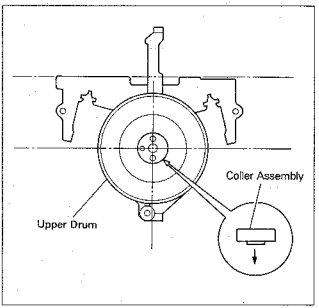


Fig. 2-4-7

4) While pressing the Collar Assembly evenly from above with the fingertips, secure the hexagonal screw.

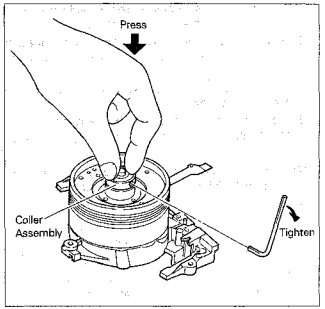


Fig. 2-4-8

5) After installing, gently turn the Upper Drum by hand and confirm normal rotation.
6) Install the Rotor and Stator Assemblies.
7) Clean the Upper and Lower Drum Assemblies and perform the following adjustments;

- Switching Point Adjustment
- Interchangeability Adjustment (be sure to check LP mode)
- Recording colour level Adjustment

2.4.5 Tension arm positioning

1) Remove the cassette housing, set the playback mode.
(Refer to 2.1.2 Check without cassette housing)
2) Turn the eccentric adjust pin to position the mark of the chassis with the tension arm tip as shown Fig. 2-4-9.

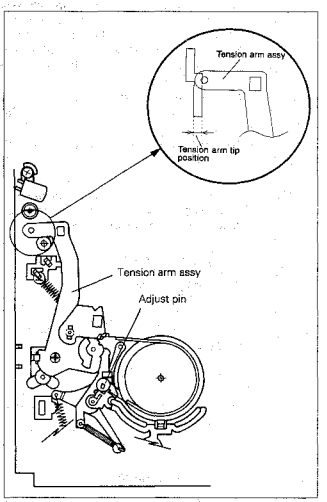


Fig. 2-4-9

Note: *Normally, if the tension post position is properly adjusted, the back tension will assume the correct value. Use the back tension cassette gauge and confirm playback tension is 35 g-cm to 48 g-cm (13.8 g-inch to 18.9 g-inch).*

2.4.6 Pinch roller cam position

1) Set the mechanism to the eject mode (cassette holder is locked in eject position).
2) Install the pinch roller cam so the largest hole near the gear teeth is aligned with the hole on the chassis.
3) Set the control cam on the deck with the hole in the groove aligned with the hole on the chassis. Observe that the small hole on the control cam and the mark on the pinch roller cam are aligned. (If the control cam does not fit readily, shift the loading arm and plate assembly within the range of mechanical play.)
4) Install the half-loading gear assembly with the hole aligned with the hole on the chassis. Secure with split washer.
5) Install the guide arm assembly with the hole aligned with hole on the chassis. Engage the spring properly.

Note: ***This is the correct mechanical alignment to install the cassette housing. The cassette housing should also be in the eject position.***

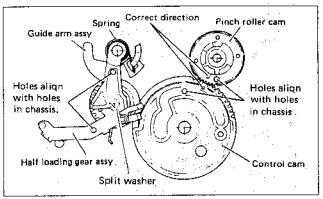


Fig. 2-4-10

2.4.7 Audio/control head height

1) Adjust the 3 screws (screw ①,②,③ in Fig. 2-5-1) to set the audio/control head height to 6.6 mm (0.26 in). Adjust all screws equally.
2) Perform interchangeability adjustments to obtain the specified control pulse and audio signal levels.

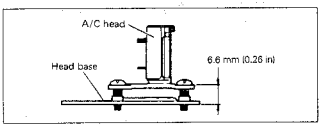


Fig. 2-4-11

Notes: • ***It is very important to correctly adjust the control pulse and audio signal in addition to the mechanical tape path.***

• ***Perform interchangeability adjustments after electrical adjustments.***

2.4.8 Loading arm and plate assembly position

1) Set for Eject mode and remove the deck terminal board.
2) Check that the preset hole of the plate assembly is in the preset position. Temporarily insert a 3 mm (0.12 in) screw to hold the position.
3) By hand, hold the loading arms in the unloading (inner) position and set the plate assembly from above.
4) Install Red and White split washers. Remove temporary screw.
5) Move the mode motor belt by hand and confirm mechanism operation.

Note: ***Observe that the brake assembly pin is engaged with the plate assembly groove.***

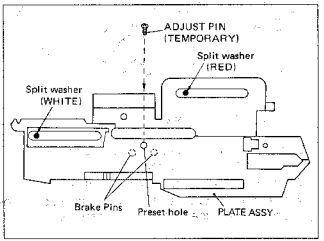


Fig. 2-4-12

2.4.9 Reel disk height

1) Measure the height of the reel disk above the main chassis.
2) Add or remove washers at the bottom of the reel disk to adjust for 12 mm (0.47 in). See Fig. 2-4-13.

Note: ***This adjustment is normally not needed. Perform after replacing the reel disk.***

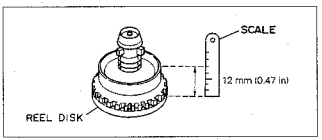


Fig. 2-4-13

2.5 TAPE INTERCHANGEABILITY ADJUSTMENT

Note: *This adjustment is extremely important. However, it is normally not required during routine service. Perform only after replacing major components (A/C head, drum assembly, etc.).*

2.5.1 Height and azimuth adjustment of A/C head

1) Connect the oscilloscope to the audio output jack on the rear of the deck.
2) Play back the stairstep portion (6 kHz, Mono) of the alignment tape.
3) Adjust Black Screw ② on the head base in Fig. 2-5-1 so that the output level is at a maximum.
4) Readjust Screw ① shown in Fig. 2-5-1 for maximum output.

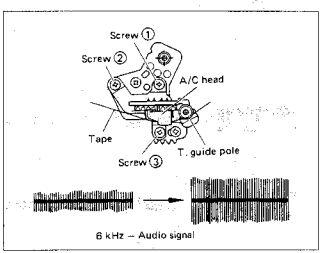


Fig. 2-5-1

2.5.2 Horizontal Position adjustment of A/C head

1) Play back the stairstep portion of the alignment tape.
2) Connect the oscilloscope to TP506 (PB FM) on the PRE/REC AMP board. Use TP511 (DRUM FF) as a trigger. Confirm that the RF envelope appears, as in Fig. 2-5-4.
3) Set the neutral manual tracking position, by simultaneously press of the (+) and (–) tracking buttons.
4) If adjustment is required, slightly loosen screws ④ and ⑤. Set A/C head positioning tool on the A/C head adjusting boss as shown in Fig. 2-5-2.
5) Turn the tool first to position the A/C head fully toward the capstan. Then gradually return it toward the durm and stop at the position of maximum FM waveform output level as shown in Fig. 2-5-4.
6) Tighten screw ⑤. Remove the tool and tighten screw ④.
7) Eject the tape and then re-insert again. Playback the Alignment Tape. Set the neutral manual tracking position. Push the tracking (+) button (count the number of pushes) until the maximum RF envelope is reduced to 1/2. Eject the tape and re-insert it again. Playback the Alignment Tape. Set the neutral manual tracking position. Push the tracking (–) button (count the number of pushes) until the maximum RF envelope is reduced to 1/2.
8) Confirm that the number of pushes are equal.

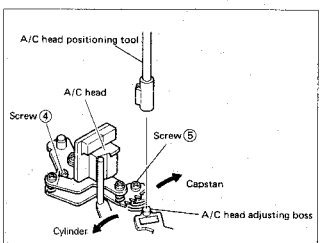


Fig. 2-5-2

2.5.3 Playback tracking

This is the most important adjustment. If incorrect, proper tracking will not be obtained in recording and Play back.
Other problems that may occur are noise in parts of the picture, poor color reproduction and picture instability.

1) Play back the stairstep portion of the alignment tape.
2) Connect the oscilloscope to TP506 (PB FM) on the PRE/REC AMP board. Use TP511 (DRUM FF) as a trigger. Confirm that the RF envelope appears, as in Fig. 2-5-4.
3) Operate the tracking adjustment (press the tracking buttons during playback) and set for maximum playback RF envelope waveform.
4) If adjustment is required, first slightly loosen the set screw located at the bottom of the guide rollers. Using the guide roller adjustment tool, adjust the supply and take-up guide rollers (refer to Fig. 2-5-3) to obtain the correct waveform. Refer to Fig. 2-5-5.

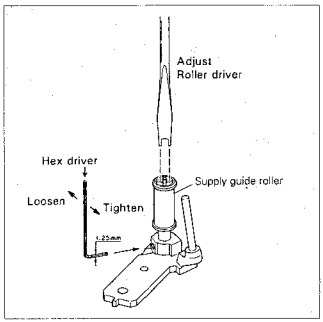


Fig. 2-5-3

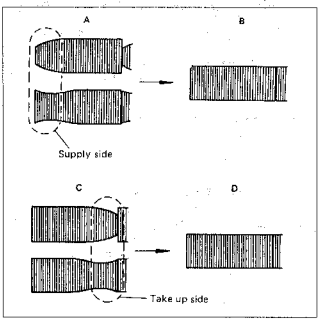


Fig. 2-5-5

5) By pushing the tracking buttons several times, vary the FM waveform output from maximum to minimum (and vice versa) gradually, and confirm that the variation proceeds in a flat shape, as in Fig. 2-5-6.
6) If the FM waveform varies and is not mostly flat, tweak the height of guide roller (s) until the RF waveform is as flat as possible.
7) Eject a tape and then playback tape again, since the height of guide rollers may move during adjustment. Confirm, when pushing the tracking (+) and (–) buttons, FM waveform variation is always flat.
8) After adjustment, confirm that the tape wrinkling does not occur at the roller upper or lower limits, as in Fig. 2-5-7.
9) Perform step 2.5.1 and 2.5.2.

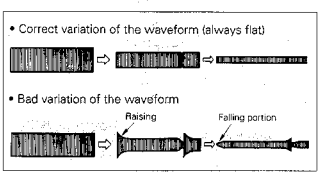


Fig. 2-5-6

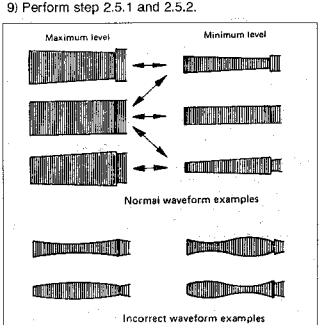


Fig. 2-5-4

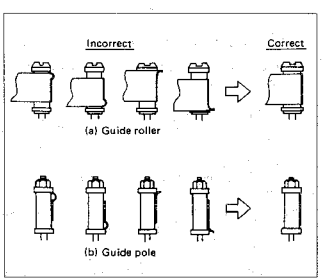


Fig. 2-5-7

SECTION 3
ELECTRICAL ADJUSTMENT

3.1 DECK SECTION ADJUSTMENT

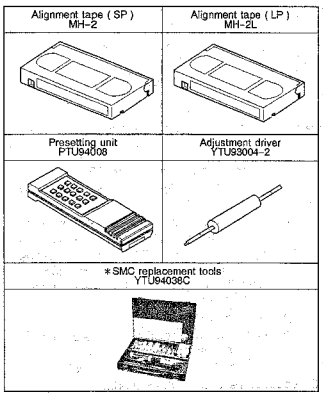
3.1.1 PRECAUTION

Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipments is available.

1. Required test equipment

1. Colour television or monitor.
2. Oscilloscope: wide-band, dual-trace, triggered delayed sweep
3. Frequency counter
4. Digital voltmeter
5. Signal generator: RF/IF sweep/maker
6. Signal generator: PAL/SECAM colour bar, stair-step
7. Recording tape

2. Required adjustment tools



Note:** ***It is convenient for replacing chip parts.

3. Colour bar signal and pattern

- SECAM colour bar signal waveform

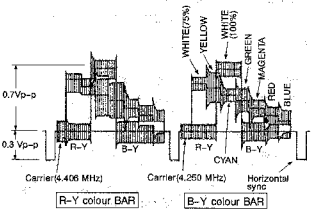


Fig. 3-1-1 SECAM colour bar signal waveform

- SECAM colour bar pattern

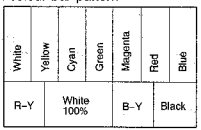


Fig. 3-1-2 SECAM colour bar pattern

- PAL colour bar signal waveform

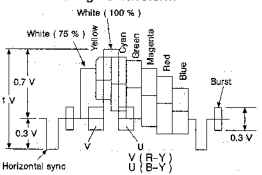


Fig. 3-1-3 PAL Colour bar signal waveform

- PAL colour bar pattern

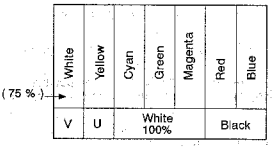


Fig. 3-1-4 PAL colour bar pattern

3.1.2 SWITCHING REGULATOR CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the MAIN BOARD.*

1. 5V DC output voltage

Signal	•TUNER
Mode	•SP •REC
Equipment	•Digital voltmeter
Measurement point	•Q802 Emitter (SWD 5 V) •Q803 Emitter (GND)
Adjustment part	•R805 (SW 5 V)
Specification	•5.2 ± 0.1 V DC

1) Connect a digital voltmeter to Q802 Emitter (SWD 5V) and Q803 Emitter (GND).
2) Adjust R805 for 5.2 ± 0.1 V DC.

3.1.3 SERVO CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the MAIN BOARD.*

1. PB switching point

Signal	•Alignment tape (MH-2) •Stairstep
Mode	•PB •Digital tracking OFF
Equipment	•Oscilloscope
Measurement point	•CN3 pin 10 (VIDEO OUT) (VIDEO UNIT BOARD)
Trigger slope (–)	•TP511 (DRUM FF) (PRE/REC AMP BOARD)
Adjustment tool	•Presetting unit [PTU94008]
Specification	•6.5 ± 0.5 H

Note: *Use only buttons "E" and "F". Deplessing other buttons during adjustment may cause adjustment errors*

1) Connect an oscilloscope to CN3 pin 10 and TP511.
2) Playback the stairstep signal of the alignment tape.
3) Set the tracking control to the center position by simultaneously pressing the (+) and (–) buttons.
4) Adjust by pressing "F" (+) or "E" (–) buttons of presetting unit for position the trigger point 6.5 ± 0.5 H from V.sync.

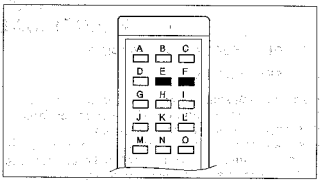


Fig. 3-1-5 Presetting unit

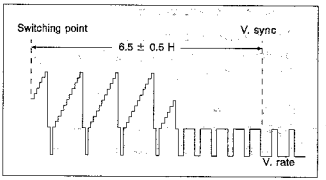


Fig. 3-1-6 PB switching point

2. Slow tracking preset

Signal	•Colour bar
Mode	•SP/LP •REC → PB (SLOW) •Digital tracking OFF
Equipment	•TV-Monitor
Adjustment tool	•Presetting unit [PTU94008]
Specification	•Minimum noise

Note: *Set VCR to the mode A by remote controller.*

1) Record a colour bar signal in the SP mode.
2) Playback recorded signal on the FWD slow mode.
3) Set the tracking control to the centre position by simultaneously pressing the (+) and (–) buttons.
4) Observe the display on a TV monitor and adjust for optimum noise condition (best tracking) by depressing "B" (+) or "C" (–) buttons of presetting unit as required.
5) Depress the STOP button.
6) Confirm that the bar noise is not visible on the monitor in the slow mode.
7) Repeat steps 2) to 6) in REV slow mode.
8) Repeat steps 1) to 7) in LP mode.

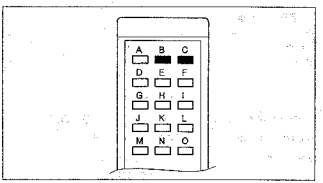


Fig. 3-1-7 Presetting unit

3.1.4 VIDEO CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the VIDEO UNIT BOARD.*

Important:

Item 1. thru 6..

1) Ordinarily performing these adjustments is not required. Adjustments should be performed only if IC2 on the VIDEO UNIT BOARD has been replaced.
2) To adjust, replace fixed resistor with variable chip resistor, then adjust as required.

1. EE Y level

Signal	•Colour bar
Mode	•EE
Equipment	•Oscilloscope
Measurement point	•CN3 pin 10 (VIDEO OUT)
Adjustment part	•R42 (EE Y LEVEL)
Specification	•2.00 ± 0.06 Vp-p (Unterminated)

1) Connect an oscilloscope to CN3 pin 10.
2) Confirm that Y level is 2.00 ± 0.06 Vp-p. Unterminated.
3) If necessary, replace R42 with the variable chip resistor NVP1301-153N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-8.

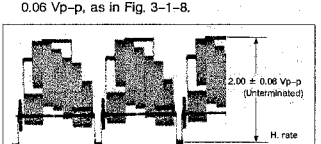


Fig. 3-1-8 EE Y level

2. White clip

Signal	•Colour bar
Mode	•EE
Equipment	•Oscilloscope
Measurement point	•IC2 pin 22
Adjustment part	•R45 (W/D CLIP)
Specification	•WHITE CLIP : 190 ± 4 % •DARK CLIP : 145 ± 8 %

1) Connect an oscilloscope to IC2 pin 22.
2) Confirm that white clip is 190 ± 4 % and dark clip is 145 ± 8 %.
3) If necessary, replace R45 with the variable chip resistor NVP1301-103N and adjust it 190 ± 4 % white clip and 145 ± 8 % dark clip, as in Fig. 3-1-9.

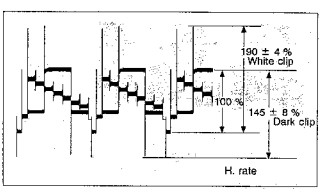


Fig. 3-1-9 White clip

3. Carrier & diviation

· Carrier

Signal	•No signal-VIDEO INPUT (Shorted RCA Phono Plug)
Mode	•EE
Equipment	•Frequency counter
Measurement point	•CN2 pin 5
Adjustment part	•R28 (CARRIER)
Specification	•3.80 MHz ± 40 kHz

1) Connect a frequency counter to CN2 pin 5.
2) Confirm that frequency is 3.80 MHz ± 40 kHz.
3) If necessary, replace R28 with the variable chip resistor NVP1301-223N and adjust it for 3.80 MHz ± 40 kHz.

· Deviation

Signal	·Colour bar
Mode	·REC then PB
Equipment	·Oscilloscope
Measurement point	·CN3 pin 10 (VIDEO OUT)
Adjustment part	·R29 (DEVIATION)
Specification	·2.00 ± 0.06 Vp-p (Unterminated)

4) Record and playback a colour bar signal.
5) Confirm that Y level is 2.00 ± 0.06 Vp-p unterminated.
6) If necessary, replace R29 with the variable chip resistor NVP1301-103N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-10.

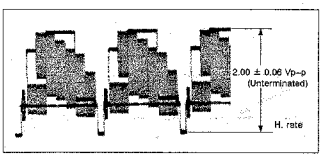


Fig. 3-1-10 Carrier & diviation

4. YNR level

Signal	·Colour bar
Mode	·EE
Equipment	·Oscilloscope
Measurement point	·IC2 pin 9
Adjustment part	·R18 (N.C. BALANCE)
Specification	·Mimimum DC step difference

1) Connect an oscilloscope to IC2 pin 9.
2) Confirm that DC step difference is minimum.
3) If necessary, replace R18 with the variable resistor NVP1301-222N and adjust it for minimum DC step difference, as in Fig. 3-1-11.

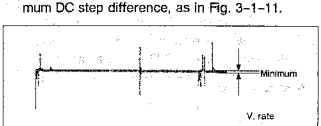


Fig. 3-1-11 YNR level

5. PB Y level

Signal	·Colour bar
Mode	·SP ·REC then PB
Equipment	·Oscilloscope
Measurement point	·CN3 pin 10 (VIDEO OUT)
Adjustment part	·R25 (PB Y LEVEL)
Specification	·2.00 ± 0.06 Vp-p (Unterminated)

Note: *Confirm that procedure 3.1.4-2. is correct before performing this adjustment procedure.*

1) Connect an oscilloscope to CN3 pin 10.
2) Record and playbck a colour bar signal.
3) Confirm that Y level is 2.00 ± 0.06 Vp-p unterminated.
4) If necessary, replace R25 with the variable resistor NVP1301-103N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-12.

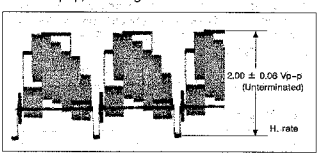


Fig. 3-1-12 PB Y level

6. REC colour level

Signal	·Colour bar
Mode	·SP ·REC
Equipment	·Oscilloscope
Measurement point	·CN2 pin 11 (REC COLOUR)
Adjustment part	·R52 (REC COLOUR LEVEL)
Specification	·200 ± 10 mVp-p

1) Connect an oscilloscope to CN2 pin 11.
2) Record the colour bar signal in SP mode.
3) Confirm that colour level is 200 ± 10 mV p-p, as in Fig. 3-1-13.
4) If necessary, replace R52 with the variable resistor NVP1301-332N and adjust it for 200 ± 10 mVp-p.

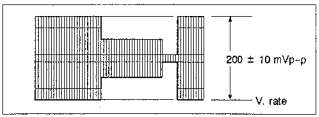


Fig. 3-1-13 REC colour level

7. MESECAM detect

Signal	•SECAM colour bar
Mode	•EE
Equipment	•Oscilloscope
Measurement point	•TP244 (MESECAM DETECT) (MAIN BOARD)
Adjustment part	•L252 (MESECAM DETECT) (MAIN BOARD)
Specification	•a:b = 3:4

1) Connect an oscilloscope to TP244.
2) Adjust L252 so that A and B are related as follows : a:b = 3:4.

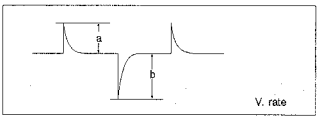


Fig. 3-1-14 MESECAM detect

3.1.5 TIMER CIRUCIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the MAIN BOARD.*

1. Timer clock

Signal	•No signal
Mode	•EE •AUX
Equipment	•Frequency counter
Measurement point	•IC601 pin 64
Adjustment part	•C614 (TIMER CLOCK)
Specification	•1024.005 ± 0.001 Hz (976.5577 ± 0.0010 μsec)

1) Connect a frequency counter to IC601 pin 64 and GND.
2) Short IC601 pin 21 to IC601 pin 63.
3) Short the lead's capacitor C616 once in order to reset IC601.
4) Adjust C614 for 1024.005 ± 0.001 Hz (976.5577 ± 0.0010 μsec).
5) Disconnect a short wire.

3.1.6 TUNER CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the IF UNIT BOARD.*

1. RF AGC

Note: *Before the following adjustment,*

1) Connect a cable to ANT IN and terminate TV OUT with 75 ohms.

2) Set a TV channel signal generator as follows.

Video: 65 dBμ 75 Ω, colour bar 87.5 % modulation.

Audio: 55 dBμ 75 Ω, 1 kHz ± 50 kHz deviation.

〈Factory Method〉

Signal	•TV broadcasting
Mode	•Tuner
Equipment	•Oscilloscope •TV signal generator
Measurement point	•IF UNIT
Adjustment part	•IF VR
Specification	•Maximum level (with minimum noise)

1) Connect an oscilloscope to IF terminal of U/V tuner (front end).
2) Adjust IF VR for maximum level, then again adjust IF VR for 6.0 dB gain.

〈Alternate Method〉

Note: *Adjust IF VR (RF AGC) to correct for excess noise in the picture or when streaks cross interference occurs due to strong electrical fields.*

1) Adjust IF VR to minimize noise or streaks on the TV screen.
2) Adjust for noisy picture with strong signal. Then adjust until noise just disappears. Select other channels to confirm proper pick-up of channels.

- **MEMO**

SECTION 4
CHARTS AND DIAGRAMS

SCHEMATIC DIAGRAM NOTES

Safety precautions

The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufactures recommended parts.

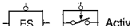
1. Schematic diagram values

Unless otherwise specified.

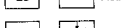
1) All resistance values are in ohms. 1/6 W, 1/8 W (refer to parts list).
   Chip resistors are 1/16 W.
   K: KΩ (1000Ω), M: MΩ (1000KΩ)
2) All capacitance values are in μF, (P: PF).
3) All inductance values in μH, (m: mH).
4) All diodes are 1SS133 or MA165, (refer to parts list).

2. Indications

AUX : Active only at high.
$\overline{AUX}$: Active only at low.

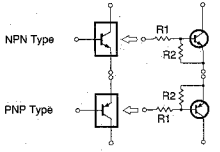


Active only at low for electronic switch.

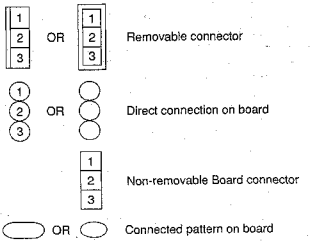


Active only at high for electronic switch.

Digital transistor :
The digital transistor includes built in resistors.
It features small size and high reliability.

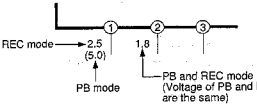


3. Interpreting Connector indications



4. Voltage measurement

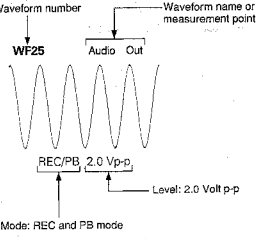
1) Voltage chart
   REC : Color bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, color bar SP mode, normal VHS mode.
   — : Unmeasurable or unnecessary to measure.
2) Audio section
   REC : 1KHz, –8 dBs sine wave signal in SP mode, Normal VHS mode.
   PB : REC then playback it.
3) Movie Camera Section
   Measured as the grey scale pattern and color bar pattern which lighted up brightly is shot in the E-E mode.
4) Schematic diagram
   Voltage Indications for REC and PB mode on Schematic are as shown below.



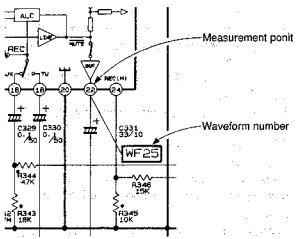
5. Waveform measurement

1) Waveform chart
   REC : Color bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, color bar SP mode, normal VHS mode.
2) Audio Section
   REC : 1KHz, –8 dBs sine wave signal in SP mode, normal VHS mode.
   PB : REC then playback it.
3) Movie Camera Section
   Measured as the grey scale or color bar pattern which lighted up brightly is shot in the E-E mode.

Example:



4) Schematic diagram
Waveform indications on schematic are as shown below.



6. Signal path Symbols

The arrows indicate the signal path as follows.

- Playback signal path
- Playback and recording signal path
- Recording signal path (including E-E signal path)
- Y signal path
- Color (Chroma) signal path
- R or R-Y signal path
- B or B-Y signal path
- Capstan servo path
- Drum servo path
- Reel servo path

CIRCUIT BOARD NOTES

1. Color indications

1) Foil side :
Foil side patterns are indicated at gray shading.
2) Component side :
Component side patterns are indicated at RED shading.

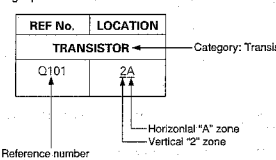
Notes:

Foil side (B side) ;
Parts on the foil side seen from foil face (pattern face) are indicated.

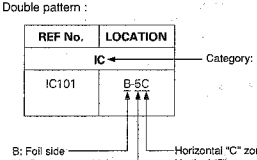
Component side (A side) ;
Parts on the component side seen from component face (parts face) are indicated.

2. Location of SMC indications

1) Single pattern :



2) Double pattern :

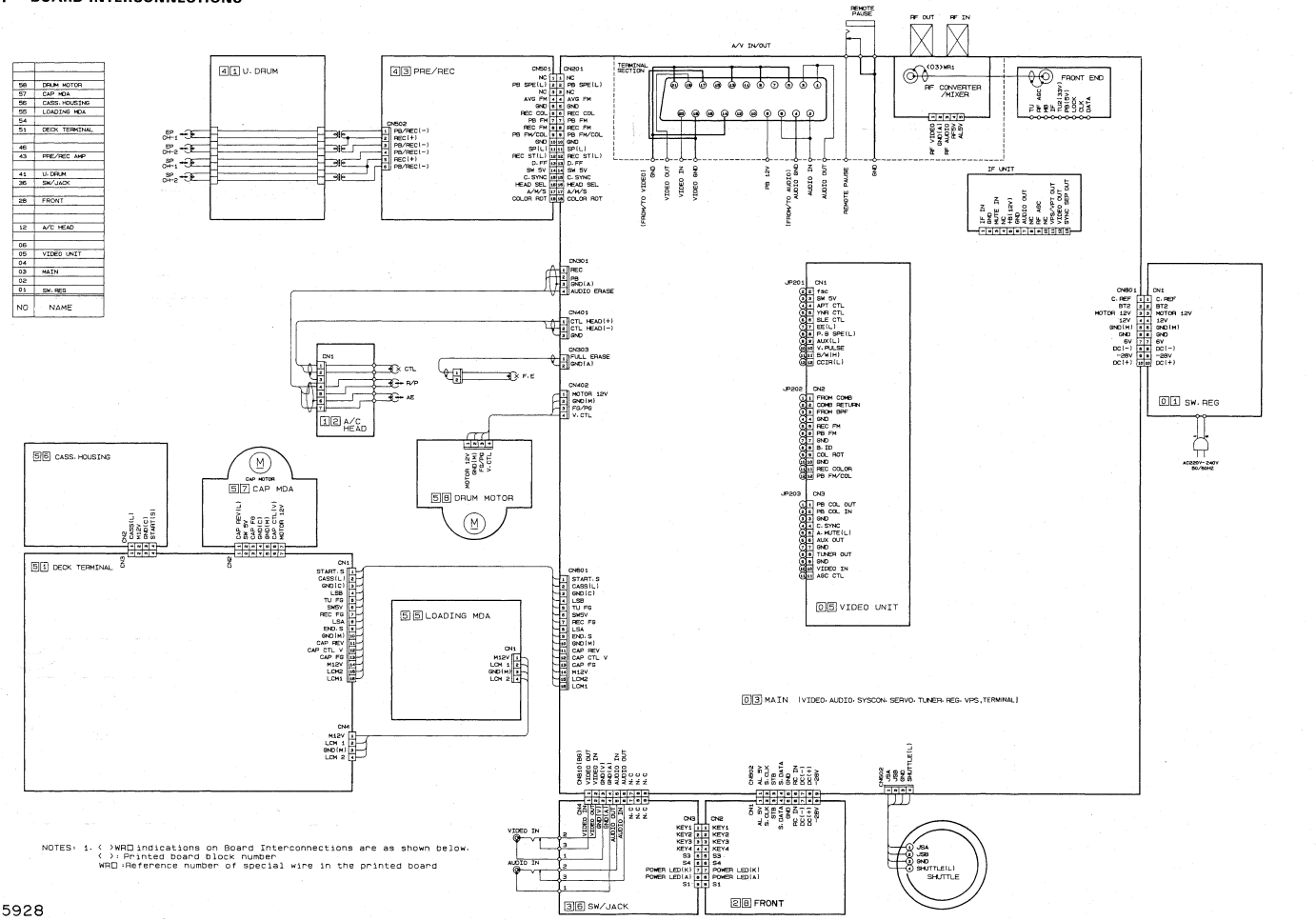


Notes:

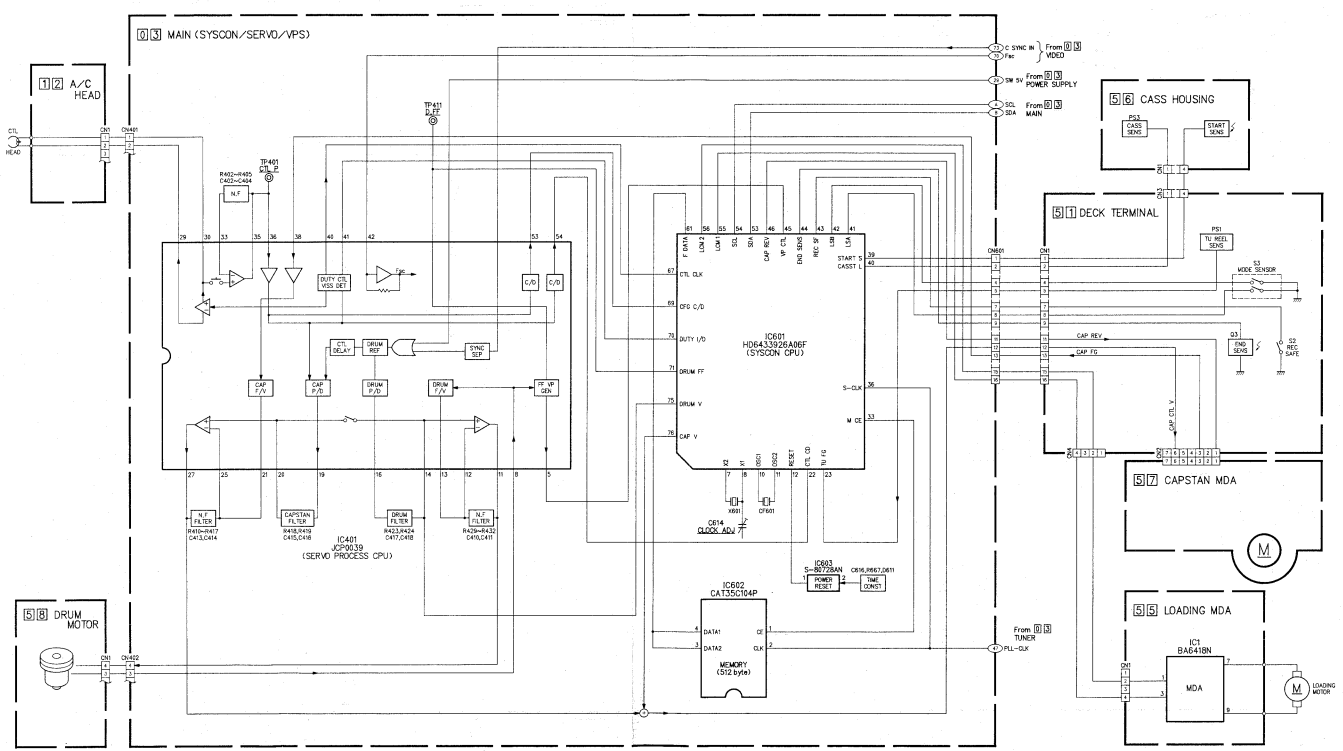
1) **For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION No. 82054C (May 1991).**
2) **For repairing SMC (Surface Mounted Components), please refer to the VIDEO SERVICE GUIDE No. VTS81001.**

S40884

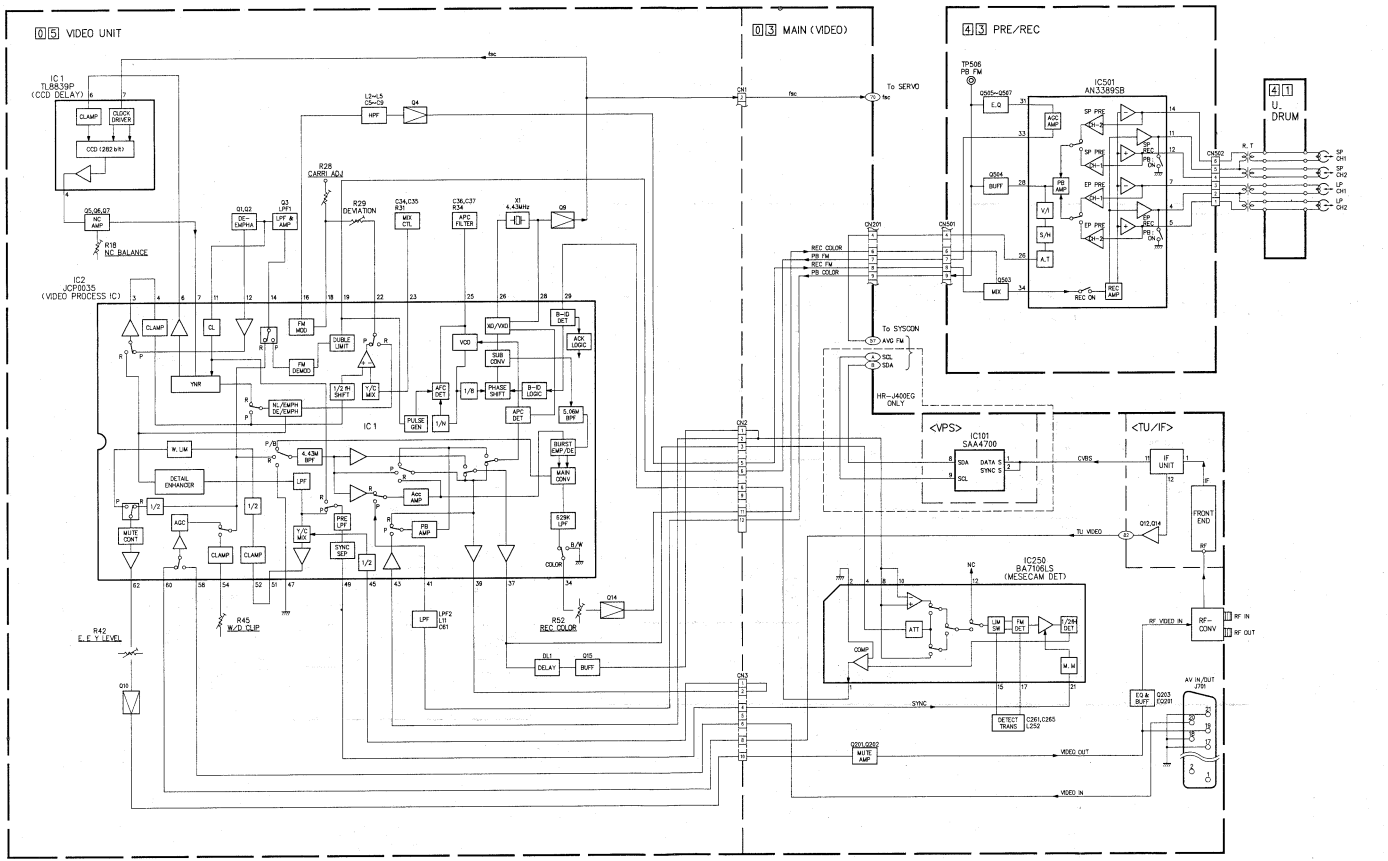
4.1 BOARD INTERCONNECTIONS



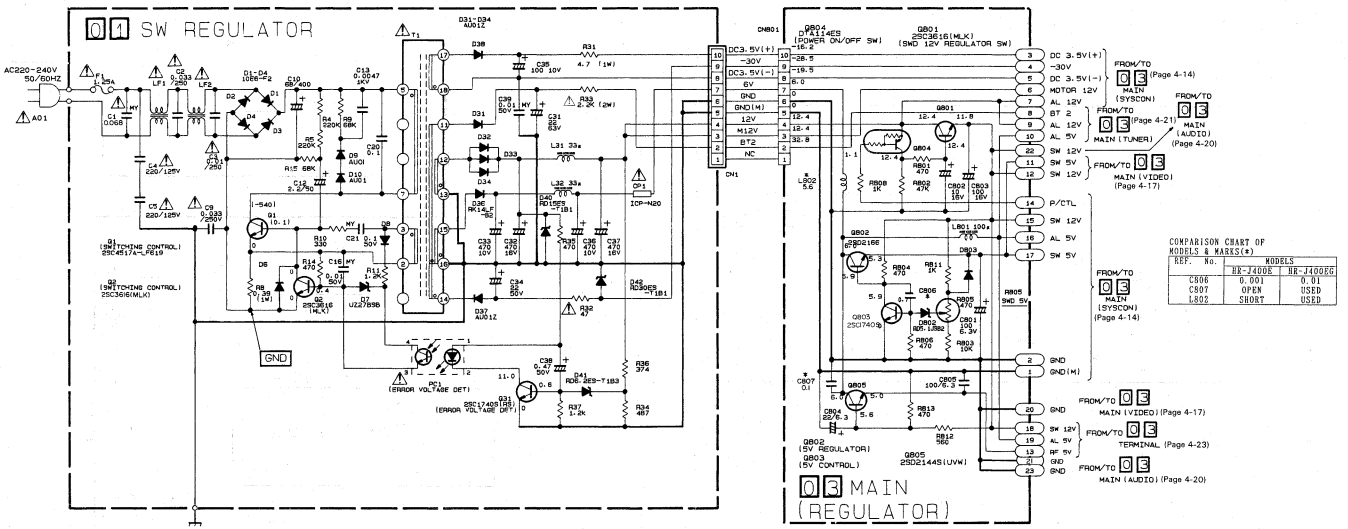
4.2 SYSCON/SERVO BLOCK DIAGRAM



4.3 VIDEO BLOCK DIAGRAM



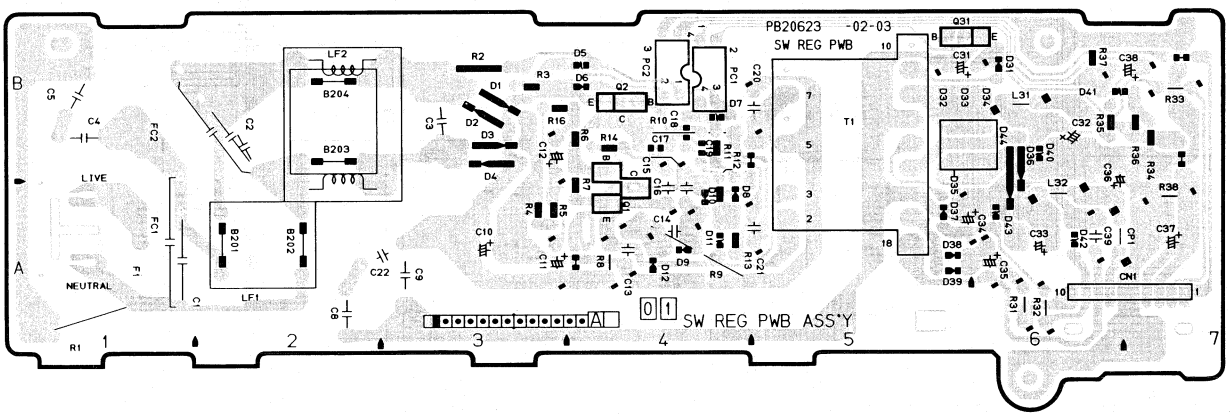
4.4 SWITCHING REGULATOR & MAIN (REGULATOR) SCHEMATIC DIAGRAMS



COMPARISON CHART OF MODELS & MARKS(*)

REF. No.	MODELS	
	HR-J400E	HR-J400EG
C806	0.001	0.01
C807	OPEN	USED
L802	SHORT	USED

4.5 SWITCHING REGULATOR CIRCUIT BOARD



MAIN COMPONENT
PARTS LOCATION
GUIDE
<SW REG PWB >

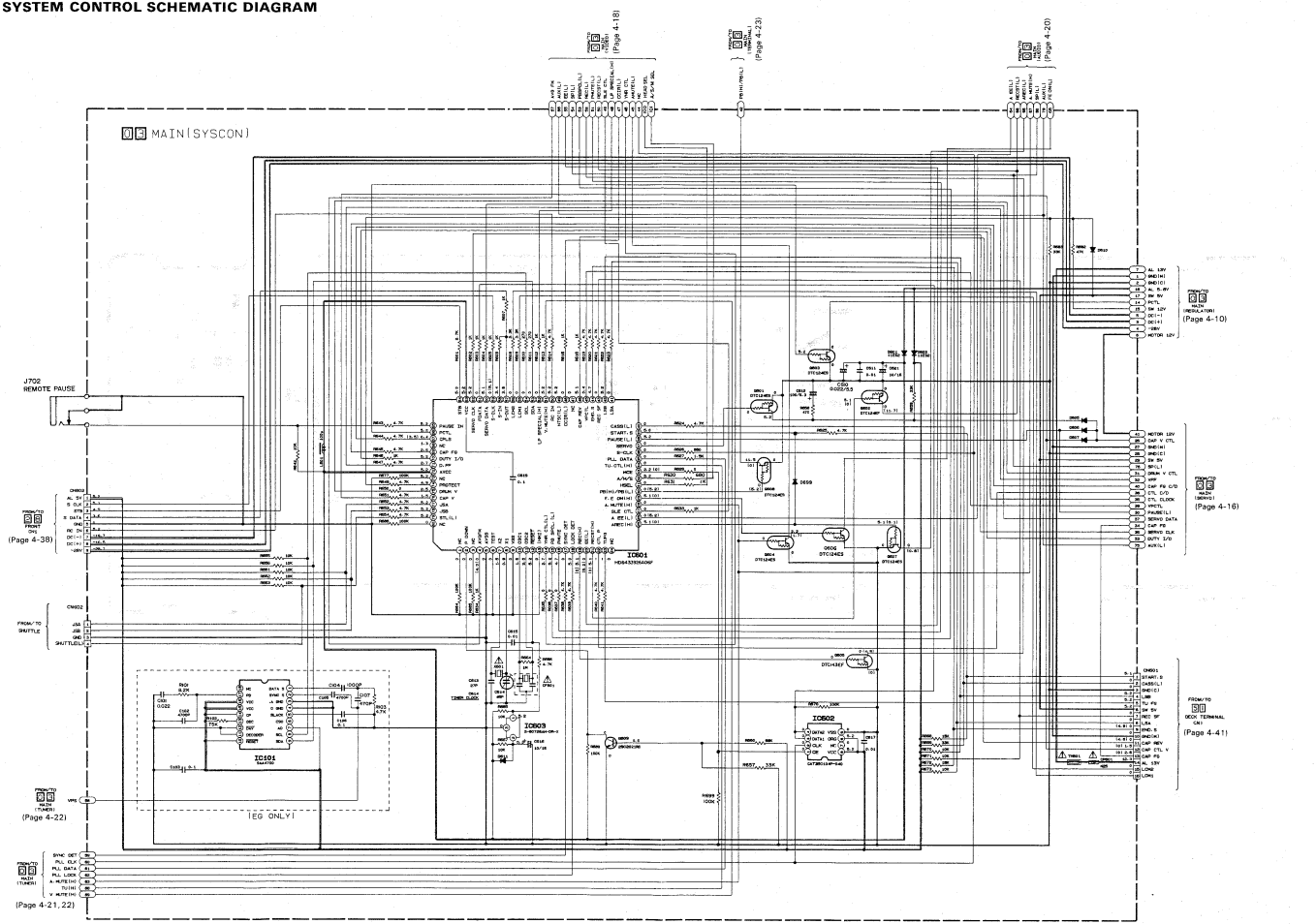
REF No.	LOCATION
TRANSISTOR	
Q1	4A
Q2	4B
Q31	5B

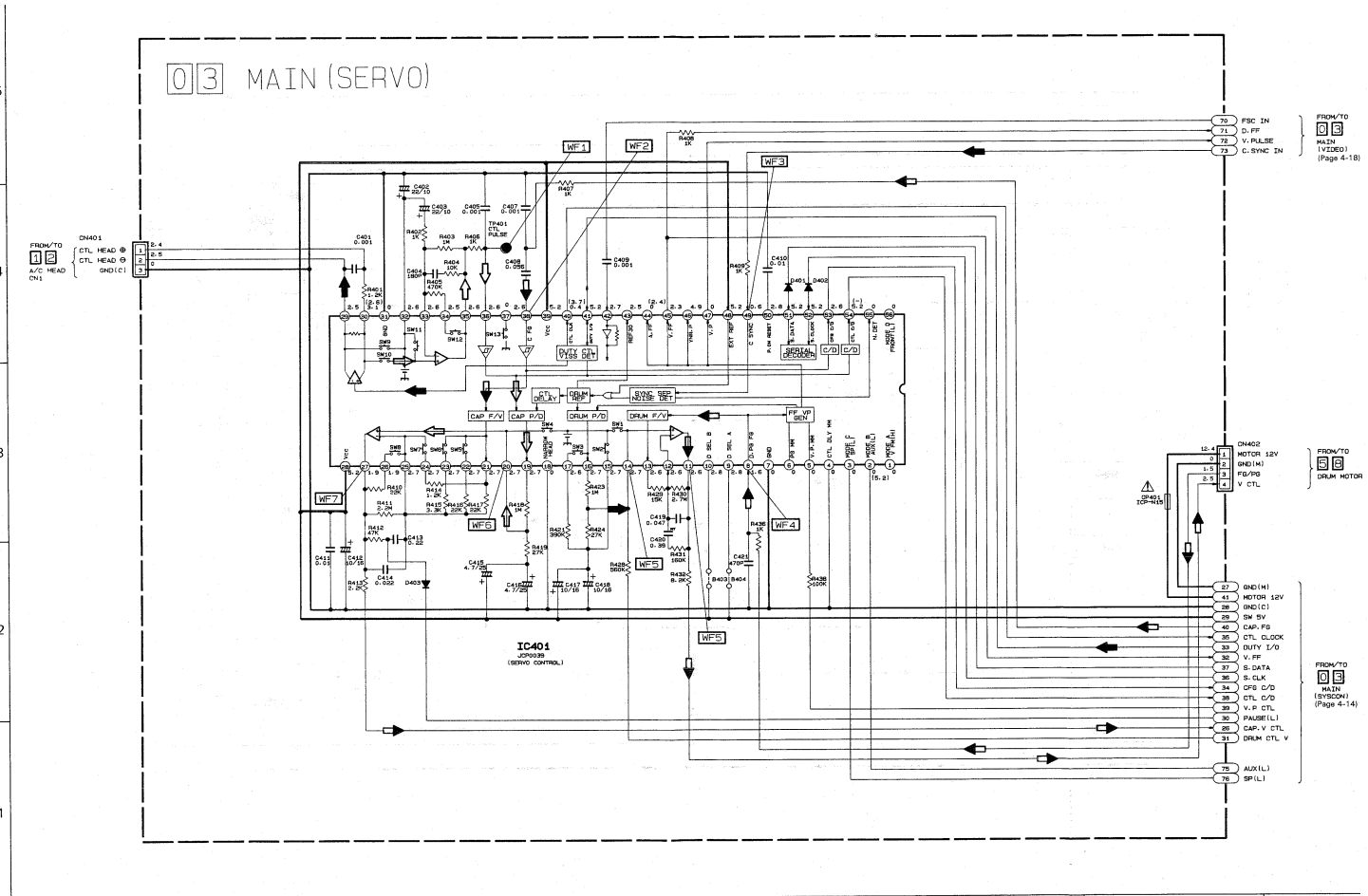
REF No.	LOCATION
DIODE	
D1	3B
D2	3B
D3	3B
D4	3B
D6	4B
D7	4B
D8	4A
D9	4A
D10	4A
D31	6B
D32	5B
D33	5B
D34	6B
D36	6B
D37	5A
D38	5A
D40	6B
D41	6B
D42	6A

REF No.	REF No.
CONNECTOR	
CN1	6A

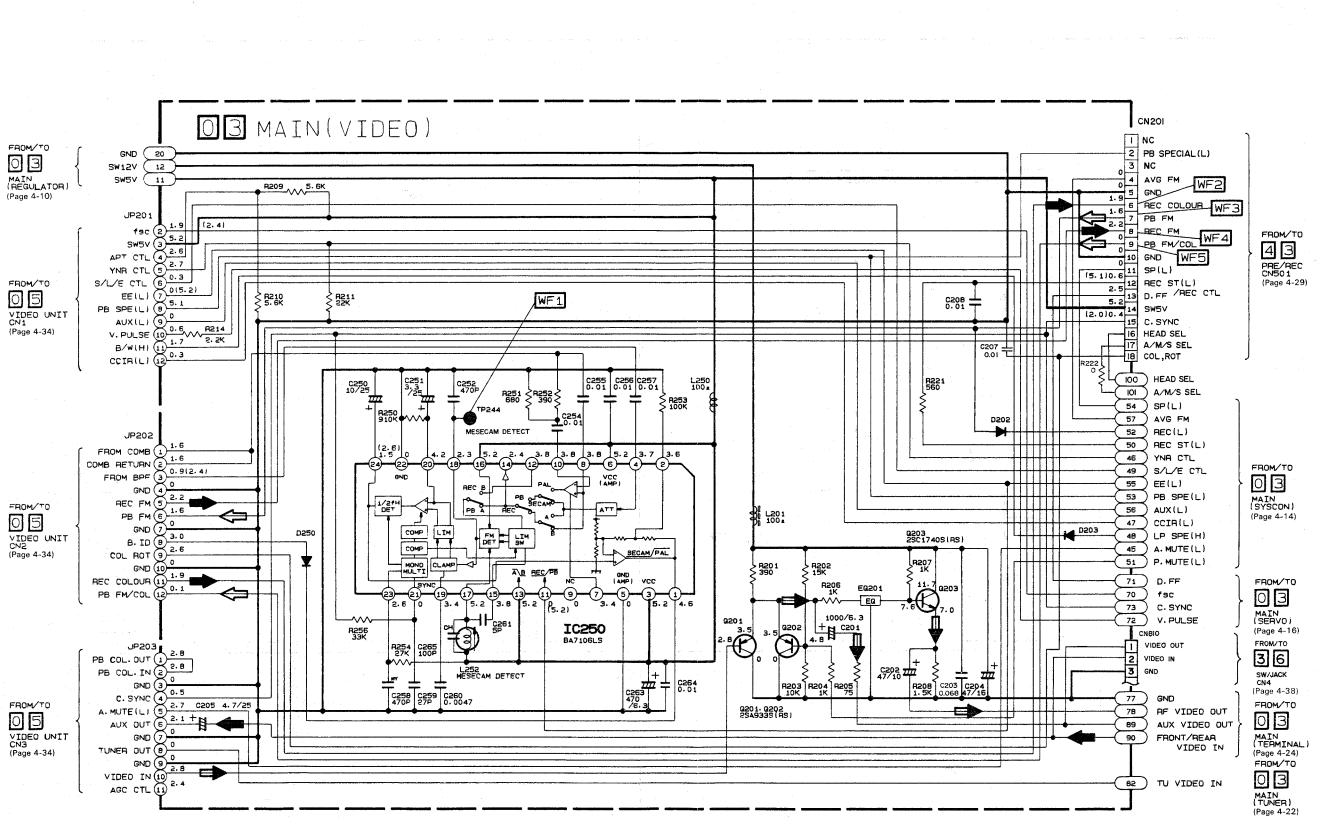
REF No.	REF No.
CP	
CP1	7A

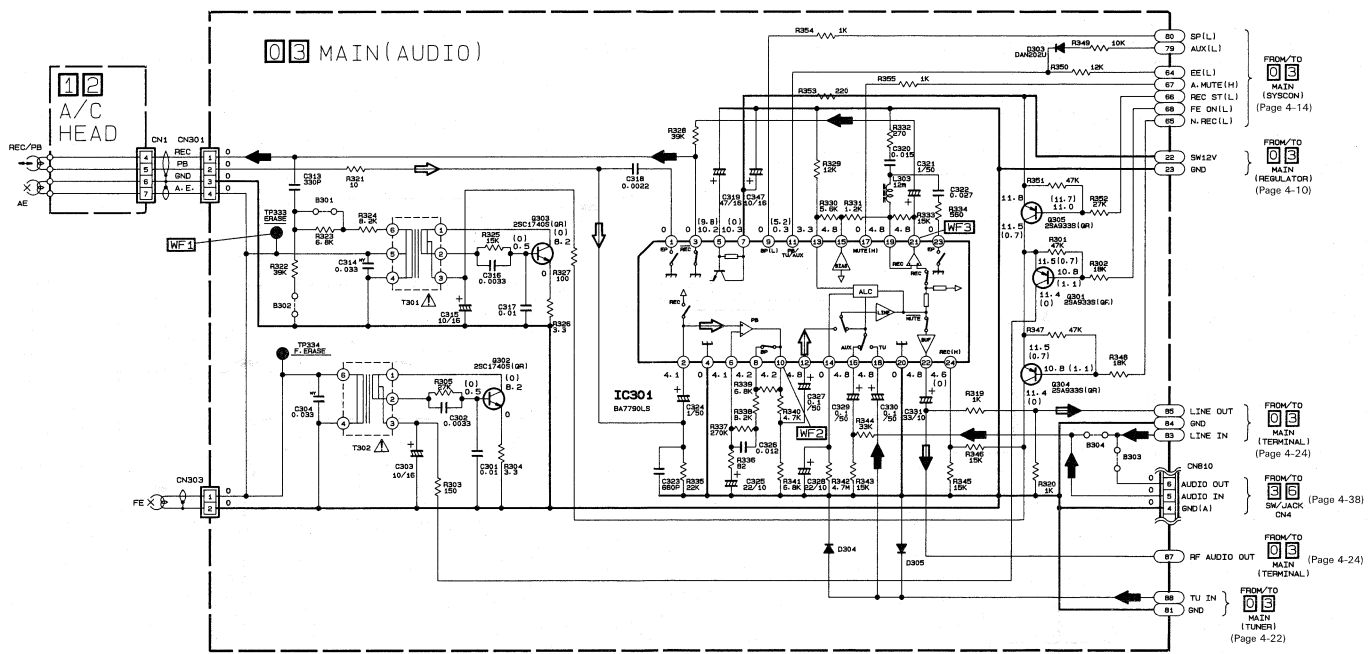
4.6 SYSTEM CONTROL SCHEMATIC DIAGRAM




03 MAIN (SERVO)
IC401
JSP0039
(SERVO CONTROL)
CN401
CTL HEAD ⊕
CTL HEAD ⊖
GND(C)
A/C HEAD
CN1
FROM/TO
CN402
MOTOR 12V
GND(M)
FG/PG
V CTL
DRUM MOTOR
SP401
ICP-N15
FSC IN
D.FF
V.PULSE
C.SYNC IN
MAIN (VIDEO) (Page 4-18)
GND(M)
MOTOR 12V
GND(C)
SW 5V
CAP.FG
CTL CLOCK
DUTY I/O
V.FF
S.DATA
S.CLK
CFG C/D
CTL C/D
V.P CTL
PAUSE(L)
CAP.V CTL
DRUM CTL V
AUX(L)
SP(L)
MAIN (SYSCON) (Page 4-14)
WF1
WF2
WF3
WF4
WF5
WF6
WF7

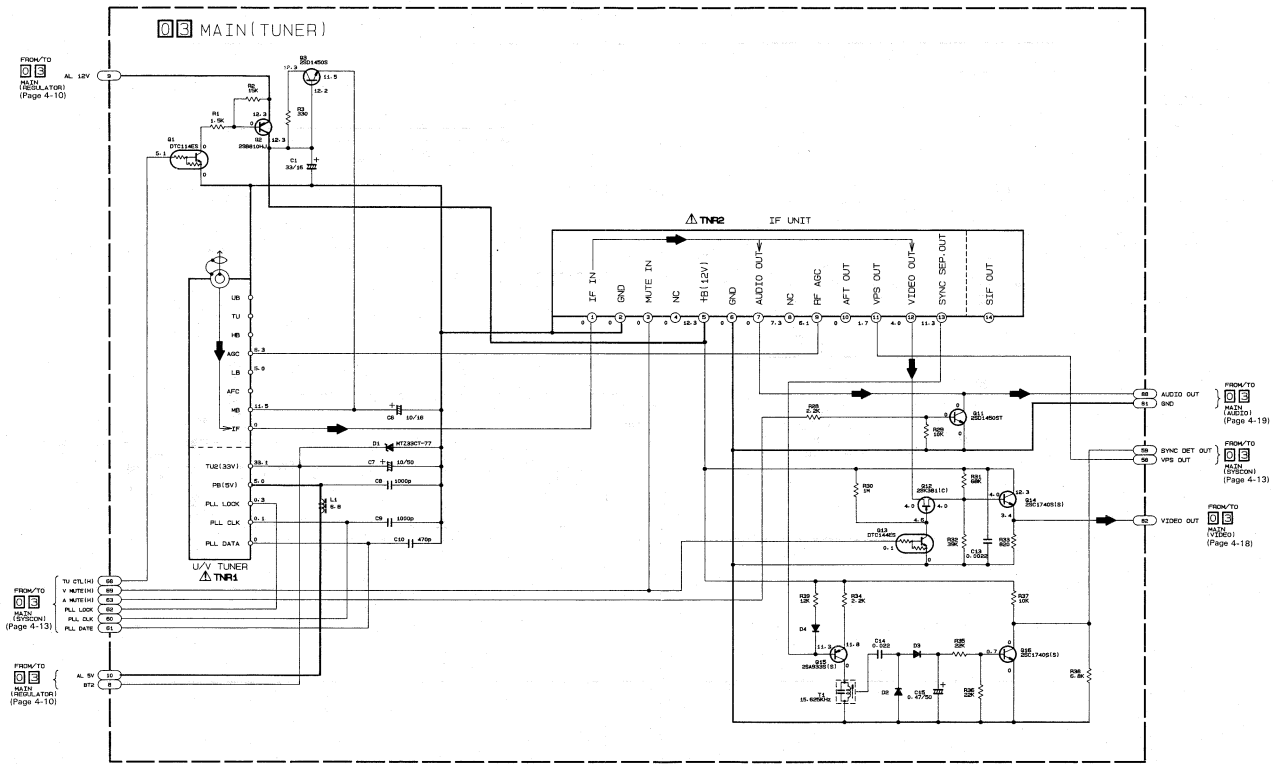
4.8 VIDEO SCHEMATIC DIAGRAM



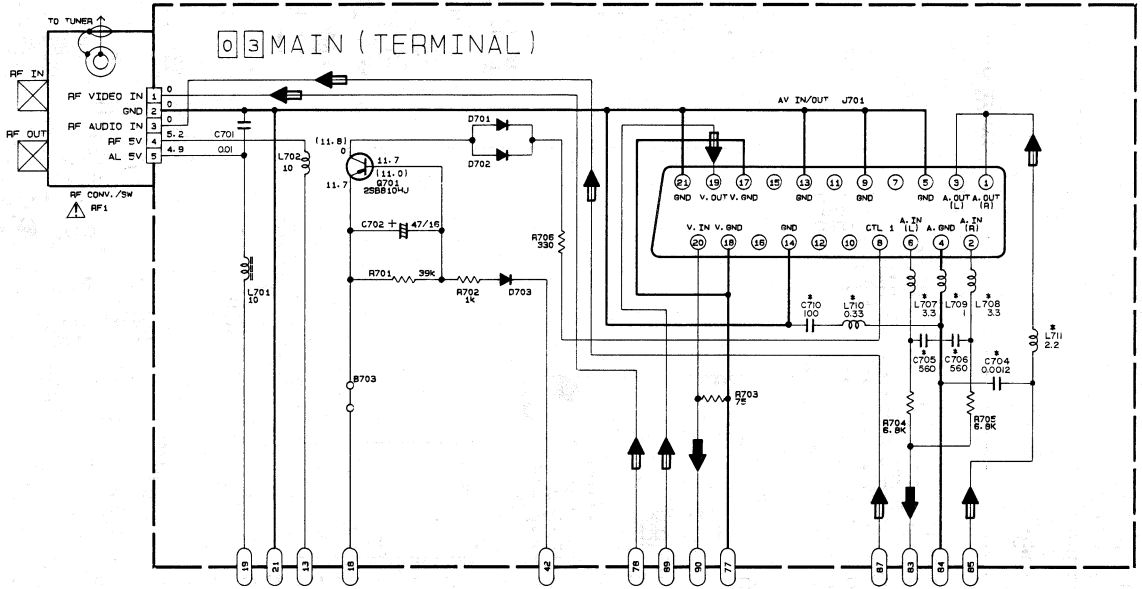

03 MAIN(AUDIO)
12 A/C HEAD
REC/PB
AE
CN1
CN301
REC
PB
GND
A.E.
WF1
TP333 ERASE
TP334 F.ERASE
T301
T302
CN303
FE
IC301
BA7790LS
WF2
WF3
D304
D305
SP(L)
AUX(L)
EE(L)
A.MUTE(H)
REC ST(L)
FE ON(L)
N.REC(L)
SW12V
GND
LINE OUT
GND
LINE IN
CN810
AUDIO OUT
AUDIO IN
GND(A)
RF AUDIO OUT
TU IN
GND
FROM/TO 03 MAIN (SYSCON) (Page 4-14)
FROM/TO 03 MAIN (REGULATOR) (Page 4-10)
FROM/TO 03 MAIN (TERMINAL) (Page 4-24)
FROM/TO 35 SW/JACK CN4 (Page 4-38)
FROM/TO 03 MAIN (TERMINAL) (Page 4-24)
FROM/TO 03 MAIN (TUNER) (Page 4-22)

S35I77

4.10 TUNER SCHEMATIC DIAGRAM



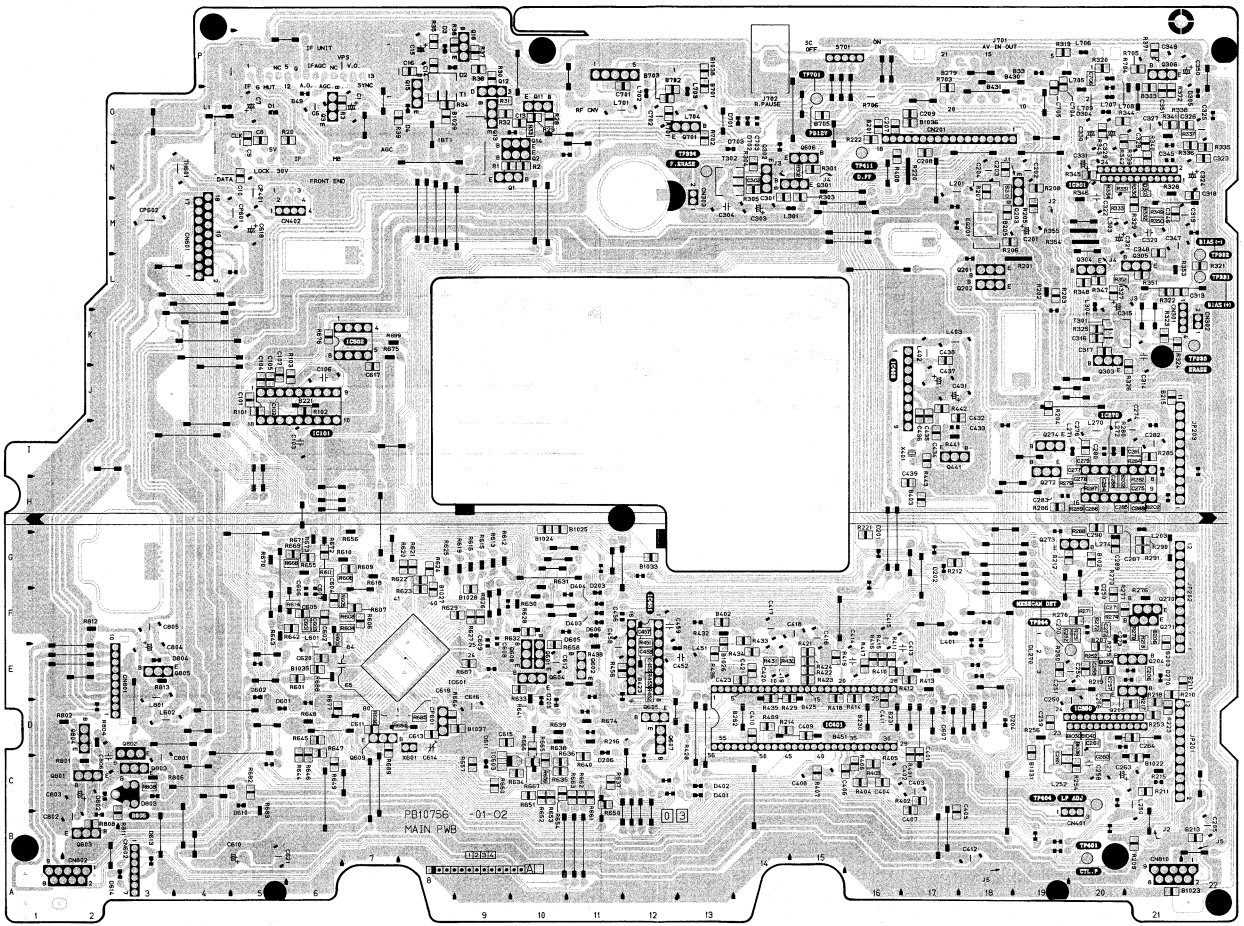
4.11 TERMINAL SCHEMATIC DIAGRAM



COMPARISON CHART OF MODELS & MARKS(*)

REF. No.	MODELS	
	HR-J400E	HR-J400EG
C704	OPEN	USED
C705	OPEN	USED
C706	OPEN	USED
C710	OPEN	USED
L707	SHORT	USED
L708	SHORT	USED
L709	SHORT	USED
L710	OPEN	USED
L711	SHORT	USED

4.12 MAIN CIRCUIT BOARD



LEADLESS COMPONENT PARTS LOCATION GUIDE

<MAIN PWB>

REF. No.	LOCATION
IC	
IC601	8E
IC603	9C

REF. No.	LOCATION
DIODE	
D303	21N

REF. No.	LOCATION
RESISTOR	
R1	9N
R2	10N
R3	60
R20	50
R28	100
R29	100
R30	9P
R31	90
R32	90
R33	100
R34	80
R35	8P
R36	8P
R37	9P
R38	9P
R39	70
R101	5J
R102	6J
R103	5J
R203	19L
R204	19J
R205	19M
R206	18M
R207	18N
R208	19N
R209	21B
R210	21E
R211	21C
R212	17G
R213	21E
R214	14D
R217	21D
R218	21D
R219	20E
R221	16G
R222	160
R223	21D
R250	19E
R251	20F
R252	20E
R253	21D
R254	20C
R270	20F
R271	20F
R272	20F
R273	20F
R274	20F
R277	20F

REF. No.	LOCATION
RESISTOR	
R278	21F
R279	19H
R281	20H
R282	21H
R283	20H
R284	21H
R285	21I
R286	19H
R287	20H
R288	20G
R289	20H
R290	21G
R291	21G
R301	15N
R302	15N
R303	15N
R304	14N
R305	14N
R319	19P
R320	20P
R321	22L
R322	21L
R323	21P
R324	21K
R325	20K
R326	21J
R327	20L
R329	21M
R330	21N
R331	20N
R332	21M
R333	20M
R334	20N
R335	220
R336	22N
R337	220
R339	21N
R340	21O
R341	21O
R342	200
R343	200
R344	200
R345	20N
R347	20L
R348	20L
R349	21M
R350	21M
R351	21L
R352	20L
R401	17C
R402	17C
R403	16C
R404	16C
R405	16C
R406	16C
R407	15C
R408	16N

REF. No.	LOCATION
RESISTOR	
R409	14D
R410	16E
R411	16E
R412	17E
R414	16D
R415	16E
R416	16E
R417	16E
R418	15D
R419	15E
R421	15E
R423	15E
R424	15E
R429	14D
R430	14E
R431	14E
R433	14F
R434	14E
R435	14D
R436	13E
R442	17J
R443	17I
R451	12E
R452	12E
R453	12E
R456	11E
R601	6E
R602	6F
R603	7E
R604	7F
R605	6F
R607	7F
R608	7G
R609	7G
R611	6G
R614	6F
R620	8G
R621	8G
R622	8F
R623	8F
R624	8G
R626	9F
R627	9F
R629	9F
R632	10F
R633	10E
R634	10C
R635	10C
R636	10C
R637	11C
R640	11C
R642	6F
R644	6C
R645	6D
R646	6C
R647	6D
R649	6C

REF. No.	LOCATION
RESISTOR	
R650	11C
R651	10C
R652	11B
R653	11B
R654	11B
R657	9C
R658	10E
R659	10C
R660	9C
R661	11C
R662	11C
R663	11C
R664	8D
R665	10D
R666	10D
R667	10C
R668	6G
R669	6G
R671	6G
R672	6G
R677	6E
R682	5C
R684	7D
R685	8D
R686	7D
R687	9E
R689	7C
R803	3C
R808	2B
R811	3B

REF. No.	LOCATION
CAPACITOR	
C101	5J
C102	5J
C104	5J
C105	5J
C107	5J
C203	18N
C206	21E
C207	160
C208	17N
C209	170
C252	19F
C254	20E
C255	20E
C256	20D
C257	20E
C259	19D
C260	20C
C261	20D
C264	21D
C265	19C
C271	20F
C272	20F
C275	21H
C276	20I

REF. No.	LOCATION
CAPACITOR	
C277	20I
C278	20H
C279	20I
C281	21I
C284	20H
C285	20H
C286	20H
C287	20H
C288	21H
C289	20G
C290	20H
C301	14N
C302	14N
C313	22L
C316	20K
C317	20K
C318	22N
C323	22N
C326	200
C346	21M
C351	21P
C401	17C
C404	16C
C405	17B
C406	16C
C407	17B
C409	15D
C410	14D
C411	16D
C421	14E
C423	14E
C432	17J
C434	17I
C435	17J
C436	17J
C438	17K
C439	17H
C453	12E
C455	12E
C457	12F
C601	6F
C602	6F
C603	6F
C611	7D
C613	8D
C615	9D
C617	7J
C620	6E
C701	11P
C704	19P
C705	19P
C706	20P

MAIN COMPONENT PARTS LOCATION GUIDE

<MAIN PWB>

REF. No.	LOCATION
IC	
IC101	6J
IC250	20D
IC301	20N
IC401	15D
IC601	8E
IC602	7K
IC603	9C

REF. No.	LOCATION
TRANSISTOR	
Q1	9N
Q2	10N
Q3	60
Q11	100
Q12	90
Q13	90
Q14	100
Q15	80
Q16	9P
Q201	18L
Q202	18L
Q203	19M
Q301	14N
Q302	14N
Q303	20K
Q304	20L
Q305	220
Q601	19E
Q602	11E
Q603	2B
Q604	10E
Q605	12D
Q607	12D
Q608	10E
Q609	7D
Q701	130
Q801	2C
Q802	3D
Q803	3C
Q804	2D
Q805	3E

REF. No.	LOCATION
DIODE	
D1	50
D2	8P
D3	8P
D4	80
D202	17G
D203	11G
D250	20F

REF. No.	LOCATION
DIODE	
D303	
D304	200
D305	220
D401	13C
D402	13C
D403	11F
D601	5D
D602	5E
D605	11F
D606	11F
D607	17D
D610	5B
D611	9C
D701	140
D702	140
D703	13N
D802	2C
D803	3C

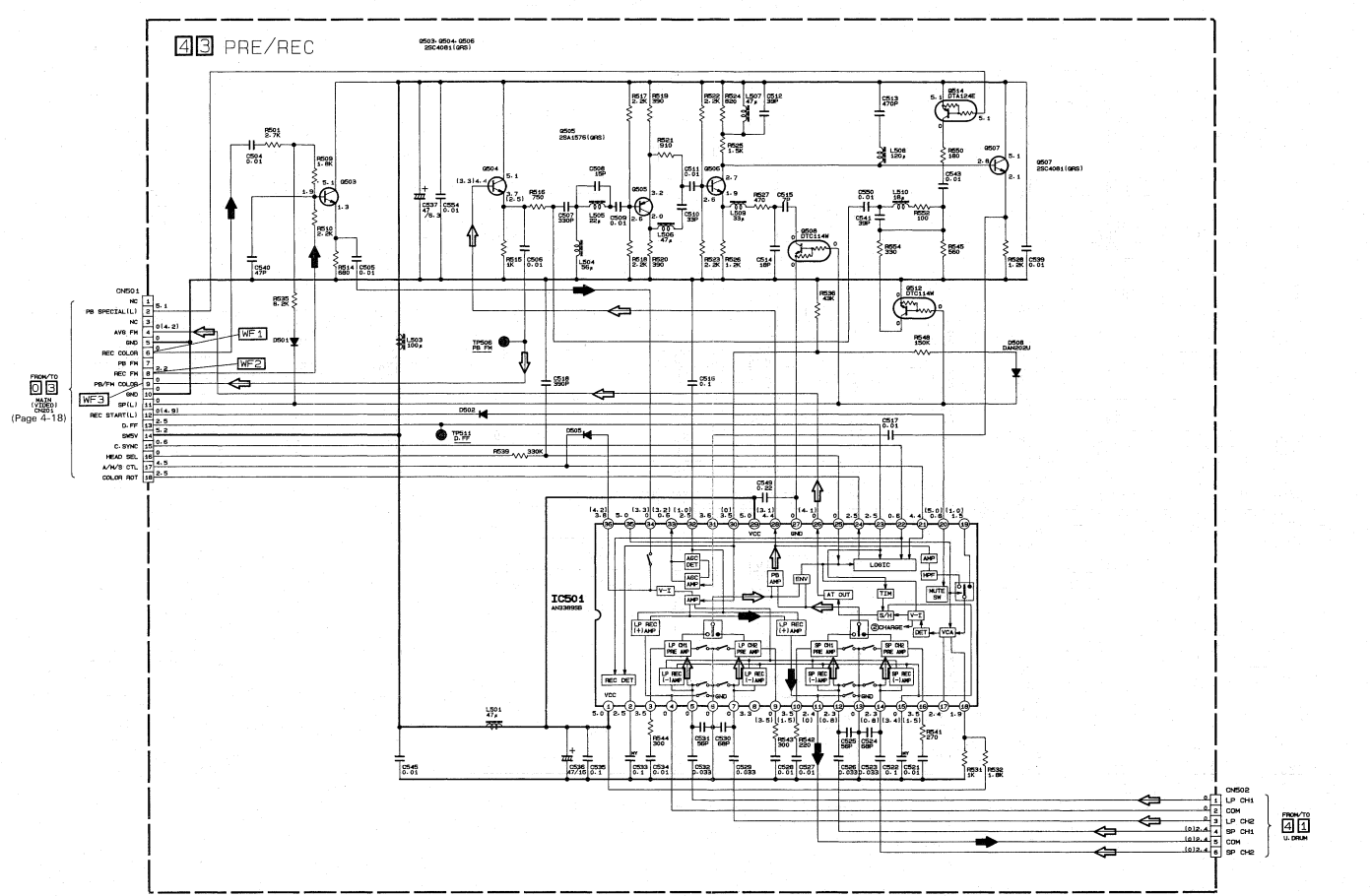
REF. No.	LOCATION
CONNECTOR	
CN201	120
CN301	21K
CN303	12M
CN401	20B
CN402	5M
CN601	4M
CN602	3B
CN801	2E
CN802	2A
CN810	21A

REF. No.	LOCATION
CP	
CP401	5N
CP601	4M

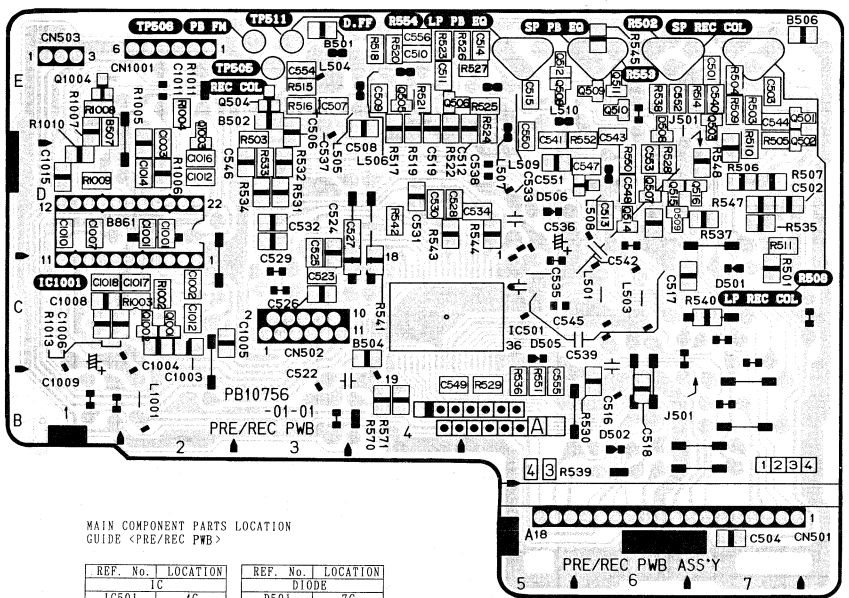
REF. No.	LOCATION
TEST POINT	
TP244	19E
TP334	12N
TP333	22M
TP401	20B

REF. No.	LOCATION
ADJUSTMENT	
C614	8D
R805	3B
L252	19C

4.13 PRE/REC SCHEMATIC DIAGRAM



4.14 PRE/REC CIRCUIT BOARD



MAIN COMPONENT PARTS LOCATION
GUIDE <PRE/REC PWB>

REF. No.	LOCATION
IC	
IC501	4C

REF. No.	LOCATION
TRANSISTOR	
Q503	7E
Q504	3E
Q505	4E
Q506	4E
Q507	6D
Q508	5E
Q512	5E
Q514	6D

REF. No.	LOCATION
DIODE	
D501	7C
D502	6B
D505	5C
D508	6E

REF. No.	LOCATION
CONNECTOR	
CN501	6A
CN502	3C

REF. No.	LOCATION
TEST POINT	
TP506	2E
TP511	3E

LEADLESS COMPONENT PARTS LOCATION
GUIDE <PRE/REC PWB>

REF. No.	LOCATION
IC	
IC501	4C

REF. No.	LOCATION
TRANSISTOR	
Q501	7E
Q502	7E
Q503	7E
Q504	3E
Q505	4E
Q506	4E
Q507	6D
Q508	5E
Q509	6E
Q510	6E
Q511	6E
Q512	5E
Q513	6D
Q514	6D
Q515	6D
Q516	7D
Q1001	2C
Q1002	2C
Q1003	2E
Q1004	1E

REF. No.	LOCATION
DIODE	
D508	6E
D509	6D

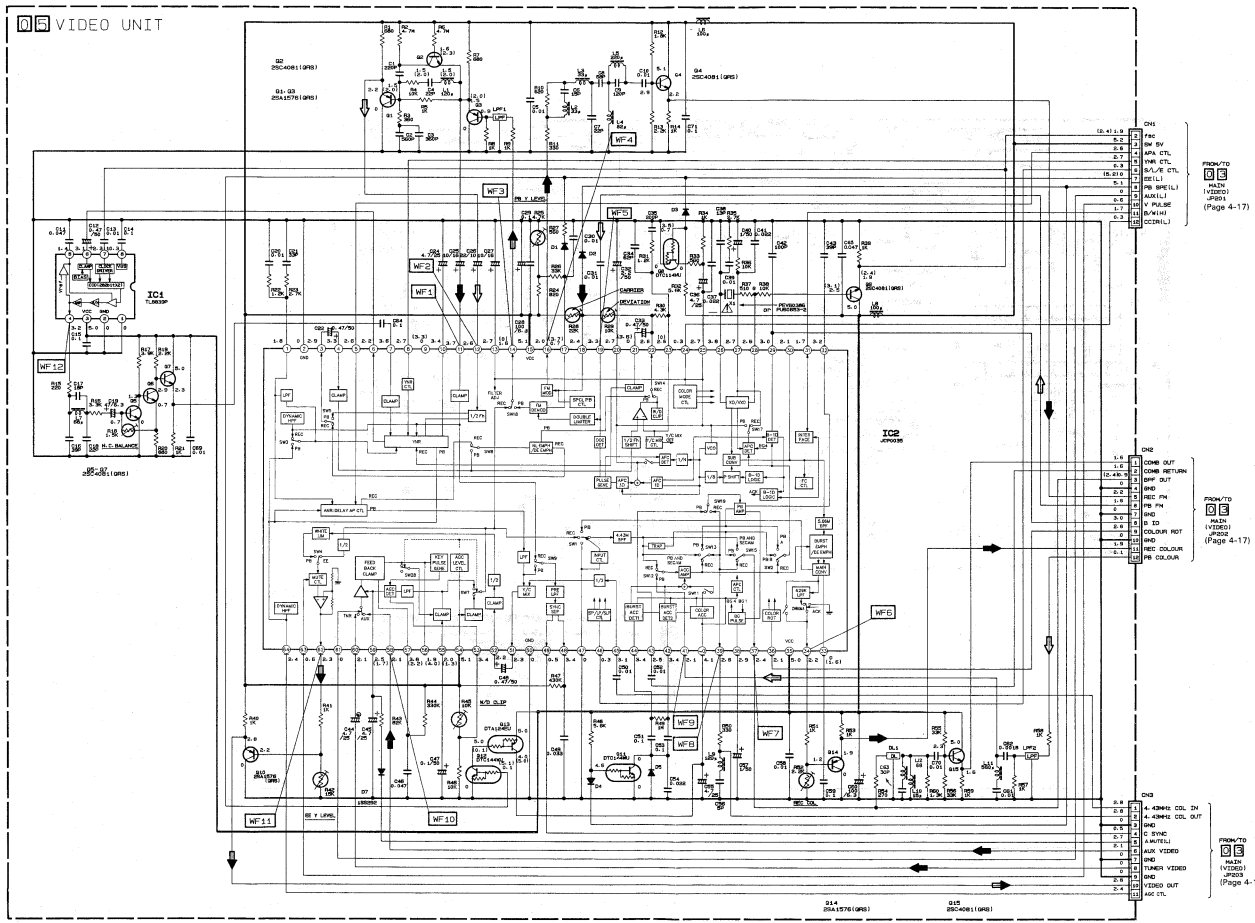
REF. No.	LOCATION
RESISTOR	
R501	7C
R503	7E
R504	7E
R505	7E
R506	7D
R507	7D
R509	7E
R510	7E
R511	7D
R514	7E
R515	3E
R516	3E
R517	4E
R518	4E
R519	4E
R520	4E
R521	4E
R522	4E
R523	4E
R524	5E
R525	5E
R526	4E
R527	5E
R528	6D
R529	5B

REF. No.	LOCATION
RESISTOR	
R530	6B
R531	3D
R532	3D
R533	3D
R534	3D
R535	7D
R536	5B
R537	7D
R538	6E
R540	7C
R541	4D
R542	4D
R543	4D
R544	5D
R545	6E
R547	7D
R548	7D
R549	6D
R550	6D
R551	5B
R552	6E
R571	4B
R1001	2D
R1002	2C
R1003	2C
R1004	2E
R1005	2E
R1006	2D
R1007	1E
R1008	1E
R1009	1D
R1010	1D
R1012	2C
R1013	1C

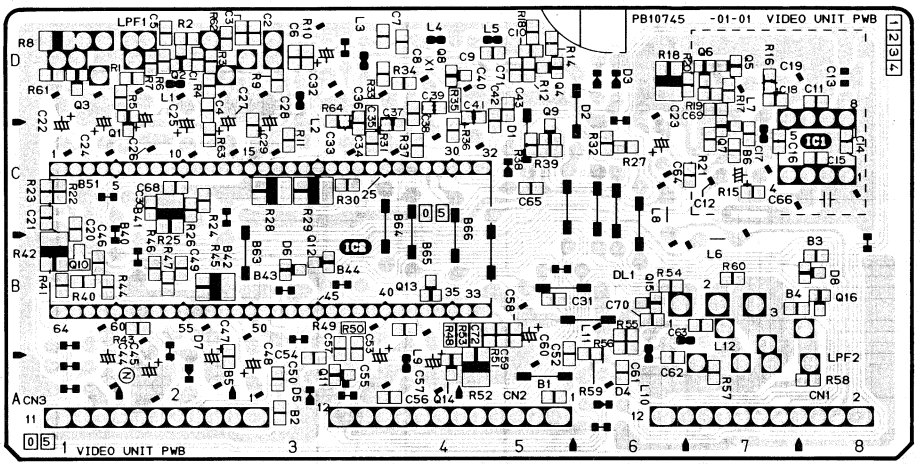
REF. No.	LOCATION
CAPACITOR	
C501	7E
C502	7D
C503	7E
C504	7A
C505	7E
C506	3E
C507	3E
C508	4E
C509	4E
C510	4E
C511	4E
C512	5E
C513	6D
C514	5E
C515	5E
C517	6C
C518	6B
C519	4E
C520	4B
C521	4D

REF. No.	LOCATION
CAPACITOR	
C523	3C
C524	3D
C525	3D
C526	3C
C527	4D
C528	4D
C529	3D
C530	4D
C531	4D
C532	3D
C534	5D
C540	7E
C541	5E
C543	6E
C544	7E
C546	3D
C548	6D
C549	4B
C550	5E
C551	5E
C552	6E
C553	6D
C554	3E
C555	5B
C556	4E
C1001	2D
C1002	2C
C1003	2C
C1004	2C
C1006	1C
C1007	1D
C1008	1C
C1010	1D
C1012	2D
C1013	2E
C1014	2D
C1015	1D
C1016	2D
C1017	2C
C1018	1C

4.15 VIDEO UNIT SCHEMATIC DIAGRAM



4.16 VIDEO UNIT CIRCUIT BOARD



MAIN COMPONENT PARTS LOCATION GUIDE

<VIDEO UNIT PWB>

REF No.	LOCATION
DIODE	
IC1	8C
IC2	3B

REF No.	LOCATION
TRANSISTOR	
Q1	2C
Q2	2D
Q3	1D
Q4	5D
Q5	7D
Q6	7D
Q7	7C
Q8	4D
Q9	5C
Q10	1B
Q11	3A
Q12	3B
Q13	4B
Q14	4A
Q15	6B

REF No.	LOCATION
DIODE	
D1	5C
D2	6D
D3	6D
D4	6A
D5	3A
D7	2B

REF No.	LOCATION
CONNECTOR	
CN1	7A
CN2	4A
CN3	2A

REF No.	LOCATION
ADJUSTMENT	
R18	6D
R25	2C
R28	3C
R29	3C
R42	1B
R45	2B
R52	5A

LEADLESS COMPONENT PARTS LOCATION GUIDE

<VIDEO UNIT PWB>

REF No.	LOCATION
TRANSISTOR	
Q1	1C
Q2	2D
Q3	1D
Q4	5D
Q5	7D
Q6	7D
Q7	7C
Q8	4D
Q9	5C
Q10	1B
Q11	3A
Q12	3B
Q13	4B
Q14	4A
Q15	6B
Q16	8B

REF No.	LOCATION
DIODE	
D6	3B
D8	8B

REF No.	LOCATION
RESISTOR	
R1	2D
R2	2D
R3	2D
R4	2D
R5	1D
R6	2D
R7	2D
R8	1D
R9	3D
R10	3D
R11	3C
R12	5D
R13	5D
R14	5D
R15	7C
R16	7D
R17	7D
R18	5D
R19	7D
R20	7D
R21	7C
R22	1C
R23	1C
R24	2C
R26	2C
R27	6C
R30	4C
R31	4C
R32	6C
R33	4D
R34	4D
R35	4D
R36	4C

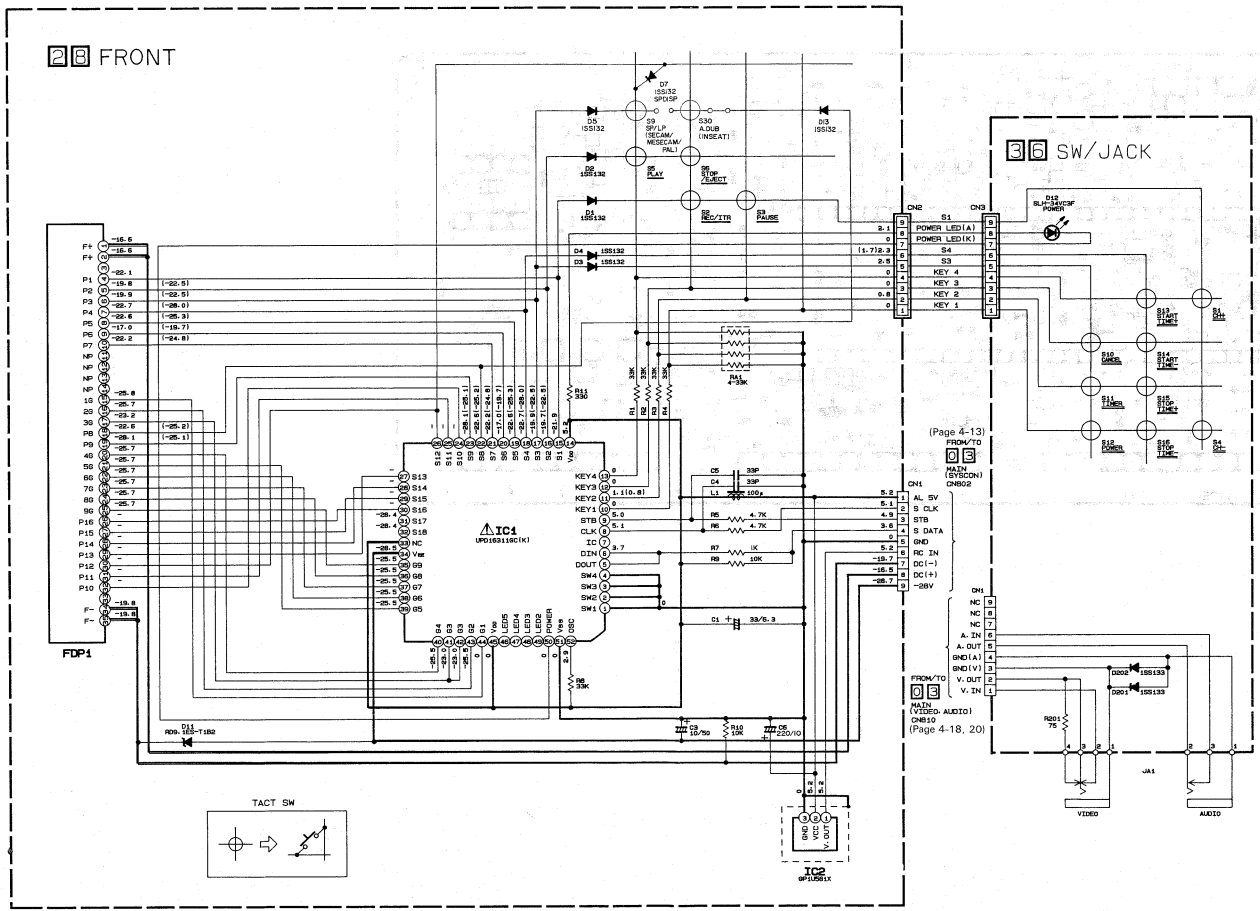
REF No.	LOCATION
RESISTOR	
R37	4C
R38	5C
R39	5C
R40	1B
R41	1B
R43	2B
R44	1B
R46	2B
R47	2B
R48	4B
R49	4B
R50	4B
R51	5B
R53	5B
R54	6B
R55	6B
R56	6B
R57	7A
R58	8A
R59	6A
R60	7B
R61	1D
R62	2D
R63	2C
R64	3D

REF No.	LOCATION
CAPACITOR	
C1	2D
C2	3D
C3	3D
C4	2D
C5	2D
C6	3D
C7	4D
C8	4D
C9	5D
C10	5D
C11	7D
C14	8C
C15	8C
C16	7C
C17	7C
C18	7D
C20	1C
C21	1C
C29	3C
C30	2C
C31	5B
C34	4C
C35	4D
C37	4C
C38	4D
C39	4D
C41	5D
C42	5D
C43	5D

REF No.	LOCATION
CAPACITOR	
C46	1B
C49	2B
C50	3A
C51	3B
C52	5A
C53	4B
C54	3A
C56	4A
C58	5B
C59	5B
C61	6A
C62	6A
C63	7B
C64	7C
C65	5C
C68	2C
C69	7D
C70	6B
C71	5D
C72	5B

REF No.	LOCATION
ADJUSTMENTS	
R18	6D
R25	2C
R28	3C
R29	3C
R42	1B
R45	2B
R52	5A

4.17 FRONT & SW/JACK SCHEMATIC DIAGRAMS



4.18 FRONT & SW/JACK CIRCUIT BOARDS

—FRONT—

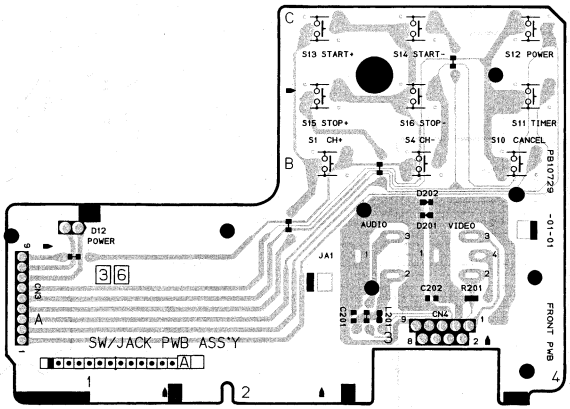
MAIN COMPONENT
PARTS LOCATION
GUIDE
<FRONT PWB>

REF. No.	LOCATION
IC	
IC1	2A
IC2	4A

REF. No.	LOCATION
DIODE	
D1	8A
D2	7B
D3	8A
D4	8A
D5	4B
D7	2C
D11	1B
D13	6A

REF. No.	LOCATION
CONNECTOR	
CN1	1A
CN2	8A

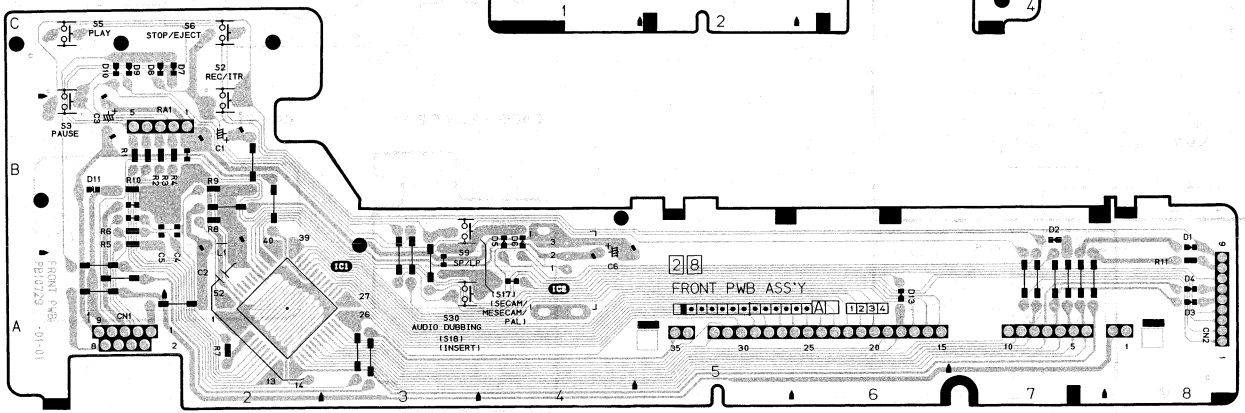
—SW/JACK—



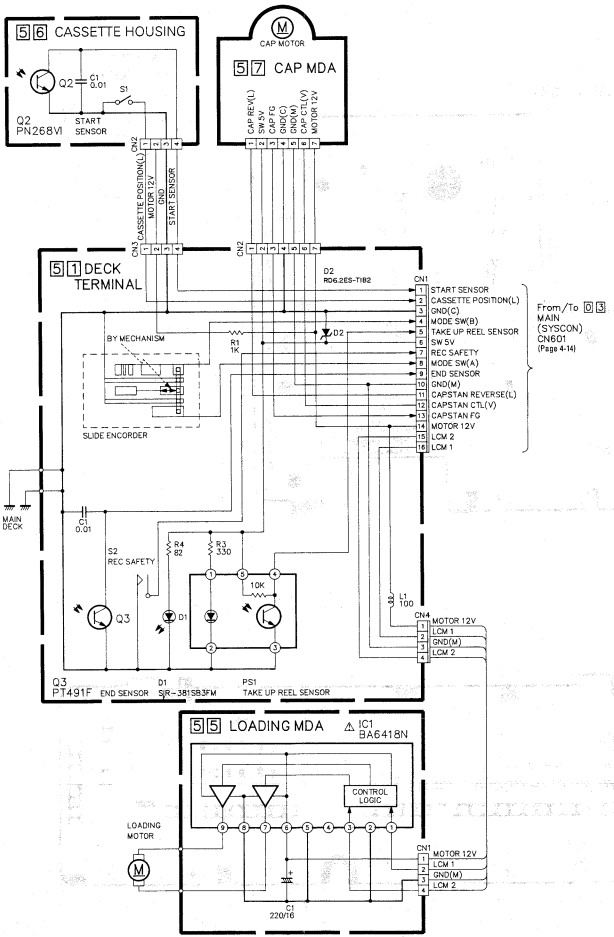
MAIN COMPONENT
PARTS LOCATION
GUIDE
<SW/JACK PWB>

REF. No.	LOCATION
DIODE	
D12	1B
D201	3B
D202	3B

REF. No.	LOCATION
CONNECTOR	
CN3	1A
CN4	3A

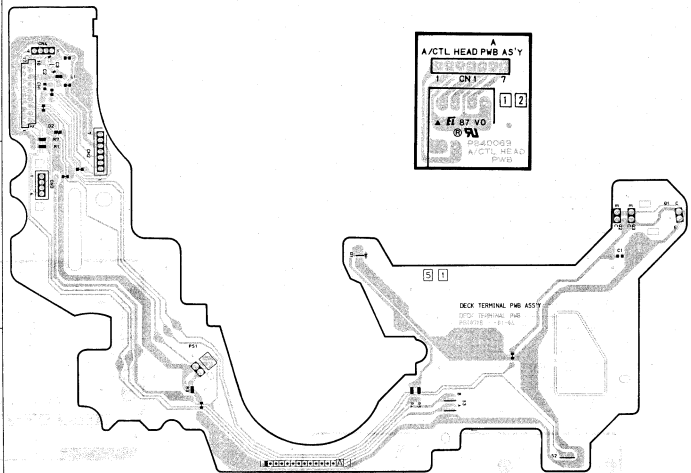


4.19 DECK TERMINAL, CASSETTE HOUSING, CAPSTAN MDA & LOADING MDA SCHEMATIC DIAGRAMS



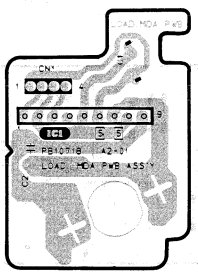
4.20 DECK TERMINAL, LOADING MDA, CASSETTE HOUSING & A/C HEAD CIRCUIT BOARDS

DECK TERMINAL C.B.A.

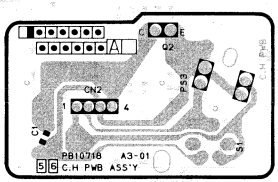


A/C HEAD C.B.A.

LOADING MDA C.B.A.



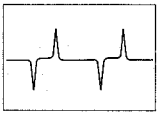
CASSETTE HOUSING C.B.A.



4.21 WAVEFORMS

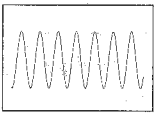
—SERVO—

WF1 TP401



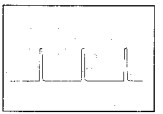
PB 2.5 Vp-p

WF2



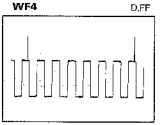
REC/PB 3.0 Vp-p

WF3



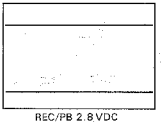
REC/PB 4.0 Vp-p

WF4 D.FF



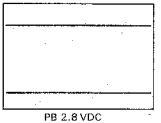
REC/PB 4.0 Vp-p

WF5



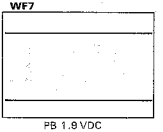
REC/PB 2.8 VDC

WF6



PB 2.8 VDC

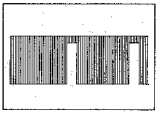
WF7



PB 1.9 VDC

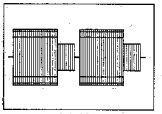
—VIDEO—

WF1 TP244



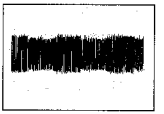
REC 1.0 Vp-p

WF2 REC COLOR



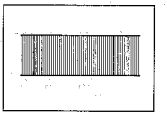
REC 0.22 Vp-p

WF3 PB FM



PB 0.45 Vp-p

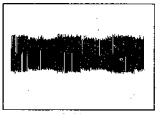
WF4 REC FM



REC 0.7 Vp-p

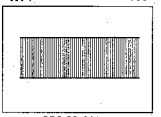
—AUDIO—

WF5 PB COLOR



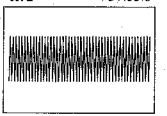
PB 0.4 Vp-p

WF1 TP333



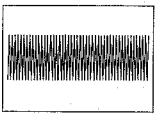
REC 32.0 Vp-p

WF2 PB AUDIO



PB 0.54 Vp-p

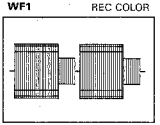
WF3 REC AUDIO



REC 3.8 Vp-p

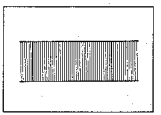
—PRE/REC—

WF1 REC COLOR



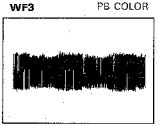
REC 0.022 Vp-p

WF2 REC FM



REC 0.7 Vp-p

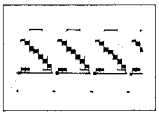
WF3 PB COLOR



PB 0.4 Vp-p

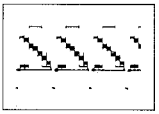
–VIDEO UNIT–

WF1



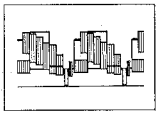
REC 0.5 Vp-p

WF2



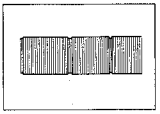
PB 0.13 Vp-p

WF3



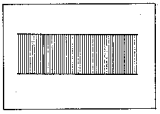
REC 1.4 Vp-p

WF3



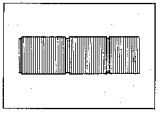
PB 0.9 Vp-p

WF4 REC FM



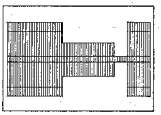
REC 2.0 Vp-p

WF5 PB FM



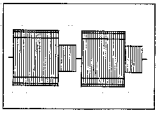
PB 0.6 Vp-p

WF6 REC COLOR



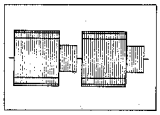
REC 0.4 Vp-p

WF7



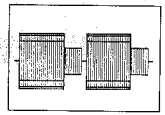
REC 1.3 Vp-p

WF8



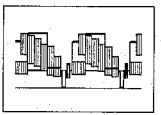
REC 0.9 Vp-p

WF9 PB COLOR



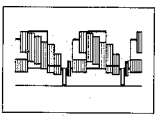
PB 0.1 Vp-p

WF10



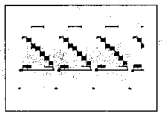
REC 1.1 Vp-p

WF11



REC 2.3 Vp-p
PB 2.6 Vp-p

WF12



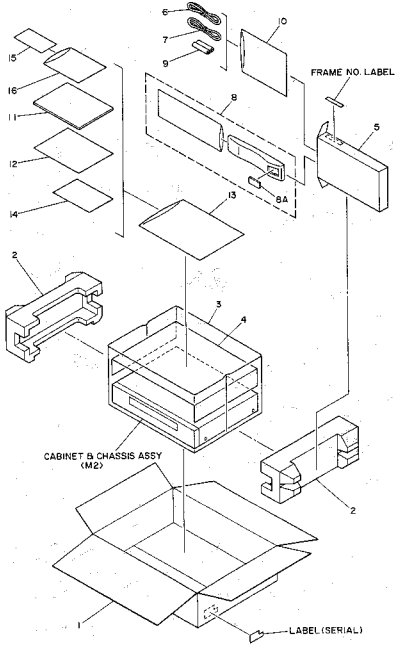
REC/PB 0.4 Vp-p

SECTION 5
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING AND ACCESSORY ASSEMBLY <M1>



#⚠ REF No. PART No. PART NAME, DESCRIPTION

****

PACKING AND ACCESSORY ASSEMBLY <M1>

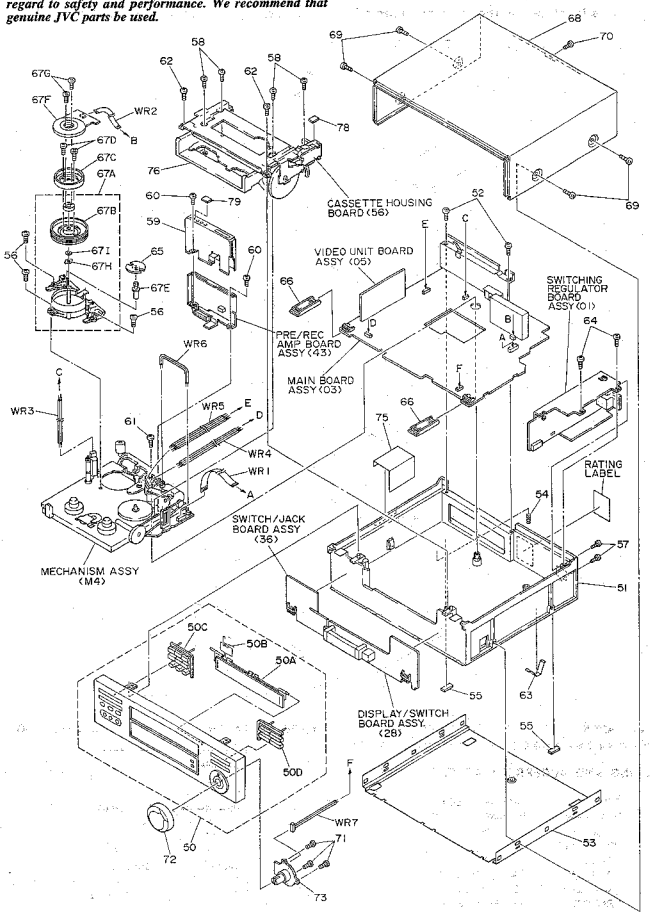
1	PQ34670-47	PACKING CASE,E
1	PQ34670-49	PACKING CASE,EG
2	PQ34616A	CUSHION ASSY
3	PQM30021-88	POLY BAG
4	PQ41026-31	PROTECT SHEET
5	PQ34715-3	CASE(ACCESSORY)
⚠ 6	QMP40E0-183	POWER CORD
⚠ 7	PEAC0222	RF CABLE,EG

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
7	PU59167-3	RF CABLE,E
⚠ 8	PQ11534A-1	REMOTE CONTROLLER
8A	PQ46063	CAP(BATTERY)
9	UM-3DJ2P	BATTERY,X2
10	QPGA020-02005	POLY BAG
⚠ 11	PU30425-1397	INSTRUCTIONS
⚠ 12	PU30425-1398	INSTRUCTIONS,E
13	QPGA025-03505	POLY BAG
14	PQ45146-26	SHEET(SPAIN),E
15	BT-20135	WARRANTY CARD,EG
16	PQ33909	POLY BAG,EG

5.2 CABINET AND CHASSIS ASSEMBLY <M2>

BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.



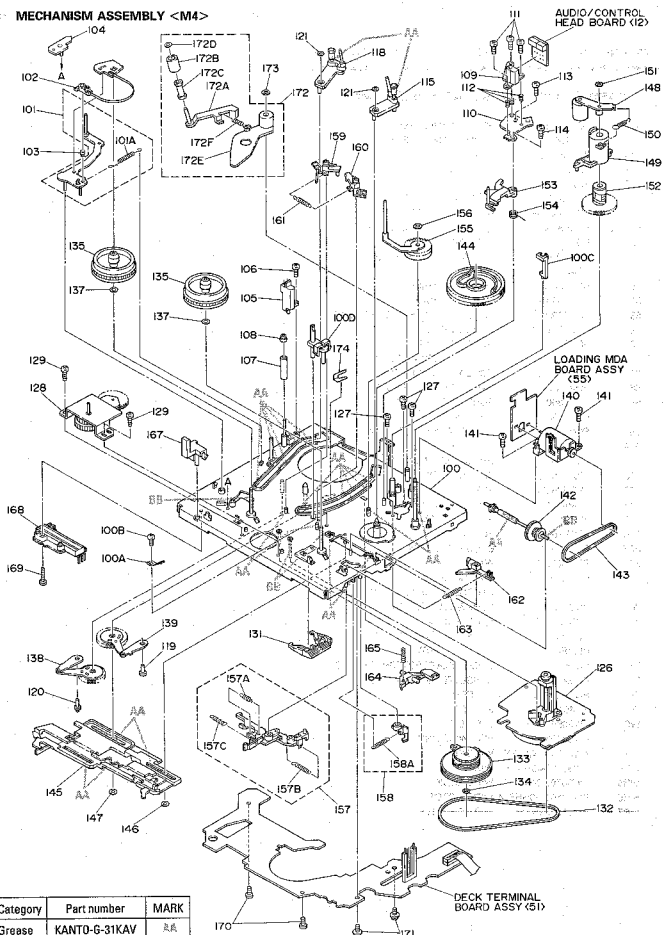
#△ REF No.	PART No.	PART NAME, DESCRIPTION

****

CABINET AND CHASSIS ASSEMBLY <M2>

50	PQ11507M-2	FRONT PANEL ASSY,EG
50	PQ11507L-2	FRONT PANEL ASSY,E
50A	PQ21518-5	CASSETTE DOOR
50B	PQ45704	TORSION SPRING
50C	PQ21534-1-2	BUTTON(1)
50D	PQ21535-1-1	BUTTON(2)
△ 51	PQ21508-2-9	BOTTOM CHASSIS
52	SDSF3008Z	SCREW,X2 TERMINAL BOARD
△ 53	PQ11515	BOTTOM COVER
54	PQM30002-219	COMPRESSION SPRING
55	PQ43013-5	FOOT,X2
56	SPST2610Z	SCREW,X3 DRUM
57	SDSF3008M	SCREW,X2 INLET
58	SPST2608Z	SCREW,X4 CASSETTE HOUSING
59	PQ21513-1-1	S.CASE(PRE.)
60	SDSG2606Z	SCREW,X2 PRE
61	PQ43831	SPECIAL SCREW,MECHA
62	SDSF3008Z	SCREW,X2 CASSETTE HOUSING
63	PQ34737	EARTH PLATE,P.S.ASSY
64	SDSF3008Z	SCREW,X2 P.S.ASSY
65	PQ45160	INERTIA PLATE,MEACH
66	PEMC0980	8 TO 8 CONN,X2 DISP-SW SW-JAC
67A	PDM2232J	DRUM SUB ASSY
67B	PDM3353J	UPPER DRUM ASSY
67C	PDZ0119-6	ROTOR ASSY
67D	SPSH2660Z	SCREW,X2
67E	PDM4311A-1	ROLLER ASSY
△ 67F	PDZ0119-5	STATOR ASSY
67G	SPSP2606Z	SCREW,X2
67H	PDM4330A	BRUSH ASSEMBLY
67I	PDM4050-9	WASHER
△ 68	PQ11514	TOP COVER
69	PQ43827	SPECIAL SCREW,X4 TOP COVER
70	SDSF3008M	SCREW,TOP COVER
71	SDSF2608Z	SCREW,X3 JOG
72	PQ34862A	KNOB(SHUTTLE)AY
73	PEME0913	SHUTTLE ASSY
75	PQ46122	SHIELD PLATE,BOTTOM CHASSIS
76	PUS29672A	CASSETTE HOUSING ASSY
78	PQM30029-211	SPACER
79	PQ46108	SPACER
WR1	PW30802-1618	WIRE,D/T
WR2	PW30803-0426	FFC WIRE,DRUM
WR3	PW30701-24AAYY	WIRE,FE
WR4	PW30702-46AAYY	WIRE,CTL
WR5	PW30705-34AAYY	WIRE,AUDIO
WR6	PW30101-A0HH884	WIRE,MOTOR
WR7	PW30202-04415	WIRE,SHUTTLE

5.3 MECHANISM ASSEMBLY <M4>



Category	Part number	MARK
Grease	KANTO-G-31KAV	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in AA and BB indicate lubrication and greasing areas.

MECHANISM ASSEMBLY <M4>

#△ REF No.	PART No.	PART NAME, DESCRIPTION
100	PQ20753J-14	MAIN DECK ASSEMBLY
100A	PQ43849	EARTH PLATE
100B	SPST2604Z	SCREW
100C	PQ43675-2	TAPE GUARD
100D	PQ21546	LED PRISM
101	PQ43497J	TENSION ARM ASSY
101A	PQ43500	TENSION SPRING
102	PQ43501B-12	TENSION BAND ASSY
103	PQ43503-1-4	ADJUST PIN
104	PQ44246	T.BAND BKT-3
105	PEHE0237	FULL ERASE HEAD
106	SDSF2614Z	SCREW,F E HEAD
107	PQ43505-1-1	ROLLER
108	PQ43506	GUIDE POLE CAP
109	PEHE0247	AUDIO CONTROL HEAD
110	PQ43509	HEAD BASE
111	PQ43687A	SPECIAL SCREW,X3
112	PQM30002-192	COMPRESSION SPRING,X3
113	SPSF2606M	SCREW
114	SPSP2606Z	SCREW
115	PU61103-2-7	POLE BASE ASSY(TAKE UP)
116	PU61151-2-6	POLE BASE ASSY(SUPPLY)
119	PQ45895	STOPPER(T)
120	PQ45894	STOPPER(S)
121	PQM30017-41	SLIT WASHER,X2
△ 126	PU61285	CAPSTAN MOTOR
127	SPSG2608Z	SCREW,X3
128	PU60618-1-3	IDLER GEAR UNIT
129	SPST2606Z	SCREW,X2
131	PQ43532B	CHANGE LEVER ASSY
132	PQM30003-24	BELT
133	PU60953-1-6	CLUTCH UNIT
134	PQM30017-8	SLIT WASHER
135	PQ46072A	REEL DISK ASSY,X2
137	PQM30018-54	SPACER,X2
138	PQ43537B	LOADING ARM ASSY (SUPLLY)
139	PQ43542D-4	LOADING ARM ASSY (TAKE UP)
140	PQ43676B-5	MODE MOTOR ASSY
141	SPSP3003Z	SCREW,X2
142	PQ43548A-2	WORM CLUTH ASSY
143	PQM30003-23	BELT
144	PQ32413-1-6	CONTROL CAM
145	PQ43555C-10	PLATE ASSY
146	PQM30017-12	SLIT WASHER
147	PQM30017-8	SLIT WASHER
148	PQ43558E	PINCH ROLLER ARM ASSY
149	PQ32415	PINCH ROLLER PRESS LEVER
150	PQM30001-233	TENSION SPRING
151	PQM30017-12	SLIT WASHER
152	PQ32416-2	PINCH ROLLER CAM
153	PQ43567A-13	GUIDE ARM ASSY
154	PQ43569-1-3	TORSION SPRING
155	PQ43570B	HALE LOADING GEAR ASSY

#△ REF No.	PART No.	PART NAME, DESCRIPTION
156	PQM30017-12	SLIT WASHER
157	PQ43575A-5	CANCEL LEVER ASSY
157A	PQM30001-273	TENSION SPRING
157B	PQM30001-237	TENSION SPRING
157C	PQM30001-274	TENSION SPRING
158	PQ43578A-2	HOOK ASSY
158A	PQM30001-238	TENSION SPRING
159	PQ43580D	MAIN BRAKE ASSY (SUPPLY)
160	PQ43582C	MAIN BRAKE ASSY (TAKE UP)
161	PQM30001-251	TENSION SPRING
162	PQ43583A-3	SUB BRAKE ASSY (TAKE UP)
163	PQM30001-235	TENSION SPRING
164	PQ43584A-5	CAPSTAN BRAKE ASSY
165	PQM30002-201	COMPRESSION SPRING
167	PU60624-1-4	REC SAFETY SWITCH
168	PU60622-1-2	SLIDE SWITCH
169	SDSF2614Z	SCREW
170	SDST2616Z	SCREW,X2
171	GPSF2608Z	SCREW,X2
172	PQ46017A	CLEANER BASE ASSY
172A	PQ3467B	CLEANER BASE
172B	PQ46019	CLEANER
172C	PQ46018	CLEANER ROLLER
172D	PQM30017-38	SLIT WASHER
172E	PQ34677	CLEANER LEVER
172F	PQ46155	TORSION SPRING
173	PQM30017-32	SLIT WASHER
174	PQ46173	LOADING GUIDE 3

5.4 ELECTRICAL PARTS LIST

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
**********			
		SWITCHING REGULATOR BOARD ASSY <01>	
PWBA1	PB20623J-03	SWITCH REGULATOR BOARD ASSY,EG	
PWBA1	PB20623E-03	SWITCH REGULATOR BOARD ASSY,E	
Q1	2SC4517A-LF619	TRANSISTOR	
Q2	2SC3616(MLK)	TRANSISTOR	
Q31	2SC1740S(RS)	TRANSISTOR	
D1	10E6-F2	DIODE	
D2	10E6-F2	DIODE	
D3	10E6-F2	DIODE	
D4	10E6-F2	DIODE	
D6	1SS133	DIODE	
D7	UZ27BSB	ZENER DIODE	
D8	1SS133	DIODE	
D9	AU01	FR DIODE	
D10	AU01	FR DIODE	
D31	AU01Z	FR DIODE	
D32	AU01Z	FR DIODE	
D33	AU01Z	FR DIODE	
D34	AU01Z	FR DIODE	
D36	RK14LF-B2	BARRIER DIODE	
D37	AU01Z	FR DIODE	
D38	1SS133	DIODE	
D40	RD15ES-T1B1	ZENER DIODE	
D41	RD6.2ES-T1B3	ZENER DIODE	
D42	RD30ES-T1B1	ZENER DIODE	
R4	QRD161J-224	RESISTOR	220KΩ,1/6W
R5	QRD161J-224	RESISTOR	220KΩ,1/6W
R8	QRX014J-R39Z	MF RESISTOR	0.39Ω,1W
R9	QRG029J-683G	OMF RESISTOR	68KΩ,2W
R10	QRG029J-331A	OMF RESISTOR	330Ω,2W
R11	QRD161J-122	RESISTOR	1.2KΩ,1/6W
R14	QRD161J-471	RESISTOR	470Ω,1/6W
R15	QRD161J-683	RESISTOR	68KΩ,1/6W
R31	QRX014J-4R7Z	MF RESISTOR	4.7Ω,1W
△ R32	QRZ0077-470X	FUSIBLE RESISTOR	47Ω,1/4W
△ R33	QRG02DJ-222X	OMF RESISTOR	2.2KΩ,2W
R34	QRV144F-4870AY	CMF RESISTOR	487Ω,1/4W
R35	QRD161J-471	RESISTOR	470Ω,1/6W
R36	QRV144F-3740AY	CMF RESISTOR	374Ω,1/4W
R37	QRD161J-122	RESISTOR	1.2KΩ,1/6W
△ C1	QFZ9022-683	F CAPACITOR,E	0.068μF
△ C2	QFZ9037-333	F CAPACITOR,EG	0.033μF
△ C3	QCZ9016-103P	CAPACITOR,E	0.01μF
△ C4	QCZ9016-221K	CAPACITOR,E	220pF
△ C5	QCZ9016-221K	CAPACITOR,E	220pF
△ C9	QCZ9026-332	CAPACITOR	0.0033μF
C10	PECA0793-686	E CAPACITOR	68μF,400V
C12	QETC1HM-225	E CAPACITOR	2.2μF,50V
C13	QCZ0212-472	CAPACITOR	0.0047μF,1KV
C16	QFLA1HJ-103Z	M CAPACITOR	0.01μF,50V
C20	QCZ0136-101Z	CAPACITOR	100pF
C21	QFV11HJ-104	F CAPACITOR	0.1μF,50V
C31	QETC1JM-226	E CAPACITOR	22μF,63V
C32	QEGB1CM-477	E CAPACITOR	470μF,16V
C33	QEGB1AM-477	E CAPACITOR	470μF,10V
C34	QETC1HM-226	E CAPACITOR	22μF,50V
C35	QEGB1AM-107	E CAPACITOR	100μF,10V
C36	QETB1AM-477	E CAPACITOR	470μF,10V
C37	QETB1CM-477	E CAPACITOR	470μF,16V
C38	QETC1HM-474	E CAPACITOR	0.47μF,50V
C39	QFLA1HJ-103Z	M CAPACITOR	0.01μF,50V
L31	PELN0687	COIL	33μH
L32	PELN0695-330K	COIL	33μH
△ PC1	PC120FY9	PH COUPLER,EG	
△ PC1	PS2561L-1(WL)	PH COUPLER,E	
△ T1	PELN0411-04	SW TRANS	
△ AO1	PEMC0973-03	AC INLET	
BKT1	PQ21514-1-2	TRANS BRACKET	
△ FC1	PEMC0965-Z	FUSE CLIP,FOR F1	
△ FC2	PEMC0965-Z	FUSE CLIP,FOR F1	
HS1	PQ45788-1-1	HEAT SINK,FOR Q1	
△ LF1	PELN0686	LINE FILTER,EG	
△ LF2	PELN0676	LINE FILTER,E	
SCW1	SDST3006Z	SCREW,X3 T BOARD-T BRACKET	
SCW2	SDST3006Z	SCREW,FOR Q1	
TB1	PQ21514-1-2	TERMINAL BRACKET	
CN1	PEMC0976-110	B TO B CONNECTOR	
△ CP1	ICP-N20	CIRCUIT PROTECTOR	
△ F1	QMF51D2-1R25J1	FUSE	T1.2A

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
**********			
		MAIN BOARD ASSEMBLY <03>	
PWBA1	PB10756C1-01	MAIN BOARD ASSY,E	
PWBA1	PB10756D1-02	MAIN BOARD ASSY,EG	
SCW1	SDST2605Z	SCREW,RF CONVERTOR	
SCW2	SDSF3008Z	SCREW,X2 TERMINAL BOARD	
SLD1	PQ46108	SPACER,X2	
TB1	PQ21574B	TERMINAL BOARD ASSY	
ETH1	PQ46090	EARTH PLATE,TERMINAL BOARD	
J701	PEMC0766	RGB21PIN SOCKET	
J702	PU50612	EARPHONE JACK	
		– TUNER SECTION –	
△ RF1	PERF0136	RF CONVERTER	
△ TNR1	PERF0135	UHF/VHF TUNER	
△ TNR2	PERF0124	IF UNIT,E	
△ TNR2	PERF0124-02	IF UNIT,EG	
Q1	DTC114ES	TRANSISTOR	
or	KRC102M	TRANSISTOR	
Q2	2SB810H,J	TRANSISTOR	
Q3	2SD1450S,T	TRANSISTOR	
Q11	2SD1450S,T	TRANSISTOR	
Q12	2SK381(C)	FE TRANSISTOR	
Q13	DTC144ES	TRANSISTOR	
or	KRC104M	TRANSISTOR	
Q14	2SC1740S(S)	TRANSISTOR	
Q15	2SA933S(S)	TRANSISTOR	
Q16	2SC1740S(S)	TRANSISTOR	
D1	MTZ33CT-77	ZENER DIODE	
D2	1SS133	DIODE	
D3	1SS133	DIODE	
D4	1SS133	DIODE	
R1	QRSA08J-152YN	RESISTOR	1.5KΩ,1/10W
R2	QRSA08J-153YN	RESISTOR	15KΩ,1/10W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R3	QRSA08J-331YN	RESISTOR	330Ω,1/10W
R28	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R29	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R30	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R31	QRSA08J-683YN	RESISTOR	68KΩ,1/10W
R32	QRSA08J-393YN	RESISTOR	39KΩ,1/10W
R33	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R34	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R35	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
R36	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
R37	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R38	QRSA08J-682YN	RESISTOR	6.8KΩ,1/10W
R39	QRSA08J-123YN	RESISTOR	12KΩ,1/10W
C1	QETC1CM-336	E CAPACITOR	33μF,16V
C6	QETF1CM-106	E CAPACITOR	10μF,16V
C7	QETC1HM-106	E CAPACITOR	10μF,50V
C8	QCYA1HK-102	CAPACITOR	0.001μF,50V
C9	QCYA1HK-102	CAPACITOR	0.001μF,50V
C10	QCYA1HK-471	CAPACITOR	470pF,50V
C13	QCYA1HK-222	CAPACITOR	0.0022μF,50V
C14	QCFA1HZ-223	CAPACITOR	0.022μF,50V
C15	QETC1HM-474	E CAPACITOR	0.47μF,50V
L1	PU59152-6R8J	COIL	6.8μH
T1	PELN0806	COIL	
WR1	PW30402-BB14M	COAXIAL CONV-TUNER	
		– VPS SECTION (EG ONLY) –	
IC101	SAA4700	IC	
R101	QRSA08J-822YN	RESISTOR	8.2KΩ,1/10W
R102	QRSA08J-753YN	RESISTOR	75KΩ,1/10W
R103	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
C101	QCFA1HZ-223	CAPACITOR	0.022μF,50V
C102	QCYA1HK-472	CAPACITOR	0.0047μF,50V
C103	QFV11HJ-104	F CAPACITOR	0.1μF,50V
C104	QCYA1HJ-102	CAPACITOR	0.001μF,50V
C105	QCYA1HK-472	CAPACITOR	0.0047μF,50V
C106	QFV11HJ-104	F CAPACITOR	0.1μF,50V
C107	QCYA1HJ-471	CAPACITOR	470pF,50V

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R208	QRSA08J-152YN	RESISTOR	1.5KΩ,1/10W
R209	QRSA08J-562YN	RESISTOR	5.6KΩ,1/10W
R210	QRSA08J-562YN	RESISTOR	5.6KΩ,1/10W
R211	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
R214	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R221	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R222	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R250	QRSA08J-914YN	RESISTOR	910KΩ,1/10W
R251	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R252	QRSA08J-391YN	RESISTOR	390Ω,1/10W
R253	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
R254	QRSA08J-273YN	RESISTOR	27KΩ,1/10W
R256	QRD161J-333	RESISTOR	33KΩ,1/6W
C201	QETC0JM-108	E CAPACITOR	1000μF,6.3V
C202	QETF1AM-476	E CAPACITOR	47μF,10V
C203	QCC11EK-683	CAPACITOR	0.068μF,25V
C204	QETF1CM-476	E CAPACITOR	47μF,16V
C205	QETF1EM-475	E CAPACITOR	4.7μF,25V
C207	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C208	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C250	QETF1EM-106	E CAPACITOR	10μF,25V
C251	QETF1EM-335	E CAPACITOR	3.3μF,25V
C252	QCYA1HK-471	CAPACITOR	470pF,50V
C254	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C255	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C256	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C257	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C258	QFN31HJ-471	M CAPACITOR	470pF,50V
C259	QCSA1HJ-270	CAPACITOR	27pF,50V
C260	QCYA1HK-472	CAPACITOR	0.0047μF,50V
C261	QCSA1HJ-5R0	CAPACITOR	5pF,50V
C263	QETC0JM-477	E CAPACITOR	470μF,6.3V
C264	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C265	QCTA1CH-101	CAPACITOR	100pF,16V
L201	PU48530-101K	COIL	100μH
L250	PU59153-101K	COIL	100μH
L252	PU60655-2	COIL	
EQ201	PELN0742	EQUALIZER	
CN201	PEMC0975-018	B TO B CONNECTOR	
		– VIDEO SECTION –	
IC250	BA7106LS	IC	
	or XRA7106LS	IC	
Q201	2SA933S(RS)	TRANSISTOR	
	or 2SA1267(YG)	TRANSISTOR	
Q202	2SA933S(RS)	TRANSISTOR	
	or 2SA1267(YG)	TRANSISTOR	
Q203	2SC1740S(RS)	TRANSISTOR	
	or 2SC3199(GB)	TRANSISTOR	
	or 2SC536SPA(FG)	TRANSISTOR	
	or 2SC3811A(RS)	TRANSISTOR	
D202	1SS133	DIODE	
D203	1SS133	DIODE	
D250	1SS133	DIODE	
R201	QRD121J-391S	RESISTOR	390Ω,1/2W
R202	QRD161J-153	RESISTOR	15KΩ,1/6W
R203	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R204	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R205	QRSA08J-750YN	RESISTOR	75Ω,1/10W
R206	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R207	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
		– AUDIO SECTION –	
IC301	BA7790LS	IC	
	or BA7795LS	IC	
	or XRA7795LS	IC	
	or XRA7790LS	IC	
Q301	2SA933S(QR)	TRANSISTOR	
Q302	2SC1740S(QR)	TRANSISTOR	
	or 2SC3199(YG)	TRANSISTOR	
Q303	2SC1740S(QR)	TRANSISTOR	
	or 2SC3199(YG)	TRANSISTOR	
Q304	2SA933S(QR)	TRANSISTOR	
Q305	2SA933S(QR)	TRANSISTOR	
D303	DAN202U	DIODE	
D304	1SS133	DIODE	
D305	1SS133	DIODE	
R301	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
R302	QRSA08J-183YN	RESISTOR	18KΩ,1/10W
R303	QRSA08J-151YN	RESISTOR	150Ω,1/10W
R304	QRSA08J-3R3YN	RESISTOR	3.3Ω,1/10W
R305	QRSA08J-273YN	RESISTOR	27KΩ,1/10W
R319	QRSA08J-102YN	RESISTOR	1KΩ,1/10W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R320	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R321	QRSA08J-100YN	RESISTOR	10Ω,1/10W
R322	QRSA08J-393YN	RESISTOR	39KΩ,1/10W
R323	QRSA08J-682YN	RESISTOR	6.8KΩ,1/10W
R324	QRSA08J-822YN	RESISTOR	8.2KΩ,1/10W
R325	QRSA08J-153YN	RESISTOR	15KΩ,1/10W
R326	QRSA06J-3R3YN	RESISTOR	3.3Ω,1/10W
R327	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R328	QRD161J-393	RESISTOR	39KΩ,1/6W
R329	QRSA08J-123YN	RESISTOR	12KΩ,1/10W
R330	QRSA08J-562YN	RESISTOR	5.6KΩ,1/10W
R331	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
R332	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R333	QRSA08J-153YN	RESISTOR	15KΩ,1/10W
R334	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R335	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
R336	QRSA08J-820YN	RESISTOR	82Ω,1/10W
R337	QRSA08J-274YN	RESISTOR	270KΩ,1/10W
R338	QRD161J-822	RESISTOR	8.2KΩ,1/6W
R339	QRSA08J-682YN	RESISTOR	6.8KΩ,1/10W
R340	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R341	QRSA08J-682YN	RESISTOR	6.8KΩ,1/10W
R342	QRSA08J-475YN	RESISTOR	4.7MΩ,1/10W
R343	QRSA08J-153YN	RESISTOR	15KΩ,1/10W
R344	QRSA08J-333YN	RESISTOR	33KΩ,1/10W
R345	QRSA08J-153YN	RESISTOR	15KΩ,1/10W
R346	QRD161J-153	RESISTOR	15KΩ,1/6W
R347	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
R348	QRSA08J-183YN	RESISTOR	18KΩ,1/10W
R349	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R350	QRSA06J-123YN	RESISTOR	12KΩ,1/10W
R351	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
R352	QRSA08J-273YN	RESISTOR	27KΩ,1/10W
R353	QRD161J-221	RESISTOR	220Ω,1/6W
R354	QRD182J-102	RESISTOR	1KΩ,1/8W
R355	QRD182J-102	RESISTOR	1KΩ,1/8W
C301	QCYA1HK-103	CAPACITOR	0.01μF,50V
C302	QCYA1HK-332	CAPACITOR	0.0033μF,50V
C303	QER61CM-106	E CAPACITOR	10μF,16V
C304	QFN31HJ-333	M CAPACITOR	0.033μF,50V
C313	QCYA1HK-331	CAPACITOR	330pF,50V
C314	QFN31HJ-333	M CAPACITOR	0.033μF,50V
C315	QETC1CM-106	E CAPACITOR	10μF,16V
C316	QCYA1HK-332	CAPACITOR	0.0033μF,50V
C317	QCYA1HK-103	CAPACITOR	0.01μF,50V
C318	QCYA1HK-222	CAPACITOR	0.0022μF,50V
C319	QETF1CM-476	E CAPACITOR	47μF,16V
C320	QCC11EJ-153	CAPACITOR	0.015μF,25V
C321	QETC1HM-105	E CAPACITOR	1μF,50V
C322	QCC11EJ-273	CAPACITOR	0.027μF,25V
C323	QCYA1HK-681	CAPACITOR	680pF,50V
C324	QEBB1HM-105	E CAPACITOR	1μF,50V
C325	QETF1AM-226	E CAPACITOR	22μF,10V
C326	QCYA1HK-123	CAPACITOR	0.012μF,50V
C327	QETF1HM-104	E CAPACITOR	0.1μF,50V
C328	QETF1AM-226	E CAPACITOR	22μF,10V
C329	QETC1HM-104	E CAPACITOR	0.1μF,50V
C330	QETC1HM-104	E CAPACITOR	0.1μF,50V
C331	QETC1AM-336	E CAPACITOR	33μF,10V
C347	QETF1CM-106	E CAPACITOR	10μF,16V
L303	PU58308-123J	COIL	12mH
△ T301	PELN0860	OSC TRANSFORMER	

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
△ T302	PELN0861	OSC TRANSFORMER	
CN301	PU60910-4	CONNECTOR	
CN303	PU60910-2	CONNECTOR	
		– SERVO SECTION –	
IC401	JCP0039	CPU, SERVO PROCESS UNIT IC	
D401	1SS133	DIODE	
D402	1SS133	DIODE	
D403	1SS133	DIODE	
R401	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
R402	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R403	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R404	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R405	QRSA08J-474YN	RESISTOR	470KΩ,1/10W
R406	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R407	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R408	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R409	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R410	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
R411	QRSA08J-225YN	RESISTOR	2.2MΩ,1/10W
R412	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
R413	QRD161J-222	RESISTOR	2.2KΩ,1/6W
R414	QRSA06J-122YN	RESISTOR	1.2KΩ,1/10W
R415	QRSA08J-332YN	RESISTOR	3.3KΩ,1/10W
R416	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
R417	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
R418	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R419	QRSA08J-273YN	RESISTOR	27KΩ,1/10W
R421	QRSA08J-394YN	RESISTOR	390KΩ,1/10W
R423	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R424	QRSA08J-273YN	RESISTOR	27KΩ,1/10W
R428	QRD161J-564	RESISTOR	560KΩ,1/6W
R429	QRSA08J-153YN	RESISTOR	15KΩ,1/10W
R430	QRSA08J-275YN	RESISTOR	2.7MΩ,1/10W
R431	QRSA08J-164YN	RESISTOR	160KΩ,1/10W
R432	QRD161J-822	RESISTOR	8.2KΩ,1/6W
R436	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R438	QRD161J-104	RESISTOR	100KΩ,1/6W
C401	QCYA1HK-102	CAPACITOR	0.001μF,50V
C402	QERF1AM-226	E CAPACITOR	22μF,10V
C403	QERF1AM-226	E CAPACITOR	22μF,10V
C404	QCSA1HJ-181	CAPACITOR	180pF,50V
C405	QCYA1HK-102	CAPACITOR	0.001μF,50V
C407	QCYA1HK-102	CAPACITOR	0.001μF,50V
C408	QFV11HJ-563	F CAPACITOR	0.056μF,50V
C409	QCYA1HK-102	CAPACITOR	0.001μF,50V
C410	QCYA1EK-103	CAPACITOR	0.01μF,25V
C411	QCYA1EK-103	CAPACITOR	0.01μF,25V
C412	QERF1CM-106	E CAPACITOR	10μF,16V
C413	QFV11HJ-224	F CAPACITOR	0.22μF,50V
C414	QCC31CK-223	CAPACITOR	0.022μF,16V
C415	QERF1EM-475	E CAPACITOR	4.7μF,25V
C416	QERF1EM-475	E CAPACITOR	4.7μF,25V
C417	QERF1CM-106	E CAPACITOR	10μF,16V
C418	QERF1CM-106	E CAPACITOR	10μF,16V
C419	QCC31CK-473	CAPACITOR	0.047μF,16V
C420	QFV11HJ-394	F CAPACITOR	0.39μF,50V
C421	QCSA1HJ-471	CAPACITOR	470pF,50V
CN401	PU60910-3	CONNECTOR	
CN402	PEMC0915-004	FFC CONNECTOR	
△ CP401	ICP-N15	CIRCUIT PROTECTOR	

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
		– SYSTEM CONTROL SECTION –	
IC601	HD6433926A06F	CPU, SYSCON	
IC602	CAT35C104P-040	IC	
	or S-6731A-040	IC	
IC603	S-90728AN-DR-X	IC	
	or RH5VA28AA-XE	IC	
Q601	DTC124ES	TRANSISTOR	
Q602	DTC124EF	TRANSISTOR	
Q603	DTC124ES	TRANSISTOR	
Q604	DTC124ES	TRANSISTOR	
Q605	DTC143EF	D.TANSISTOR	
Q606	DTC124ES	TRANSISTOR	
Q607	DTC124ES	TRANSISTOR	
Q608	DTC124ES	TRANSISTOR	
Q609	2SC2021R,S	TRANSISTOR	
D601	11ES2	DIODE	
D602	11ES2	DIODE	
D605	1SS133	DIODE	
D606	1SS133	DIODE	
D607	1SS133	DIODE	
D610	1SS133	DIODE	
D611	1SS133	DIODE	
D699	1SS133	DIODE	
R601	QRSA08J-272YN	RESISTOR	2.7KΩ,1/10W
R602	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R603	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R604	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R605	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R606	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R607	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R608	QRSA08J-332YN	RESISTOR	3.3KΩ,1/10W
R609	QRSA08J-332YN	RESISTOR	3.3KΩ,1/10W
R610	QRD161J-271	RESISTOR	270Ω,1/6W
R611	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R612	QRD161J-102	RESISTOR	1KΩ,1/6W
R613	QRD161J-102	RESISTOR	1KΩ,1/6W
R614	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R616	QRD161J-102	RESISTOR	1KΩ,1/6W
R618	QRD161J-102	RESISTOR	1KΩ,1/6W
R619	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R620	QRSA06J-472YN	RESISTOR	4.7KΩ,1/10W
R621	QRSA06J-472YN	RESISTOR	4.7KΩ,1/10W
R622	QRSA06J-472YN	RESISTOR	4.7KΩ,1/10W
R623	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R624	QRSA06J-472YN	RESISTOR	4.7KΩ,1/10W
R625	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R626	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R627	QRSA08J-152YN	RESISTOR	1.5KΩ,1/10W
R629	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R630	QRD161J-681	RESISTOR	680Ω,1/6W
R631	QRD161J-102	RESISTOR	1KΩ,1/6W
R633	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R634	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R635	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R636	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R637	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R638	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R639	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R640	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R641	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R642	QRSA08J-103YN	RESISTOR	10KΩ,1/10W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R643	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R644	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R645	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R646	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R647	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R649	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R650	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R651	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R652	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R653	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R654	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R655	QRD161J-103	RESISTOR	10KΩ,1/6W
R656	QRD161J-103	RESISTOR	10KΩ,1/6W
R657	QRSA08J-333YN	RESISTOR	33KΩ,1/10W
R658	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R659	QRSA08J-333YN	RESISTOR	33KΩ,1/10W
R660	QRSA08J-563YN	RESISTOR	56KΩ,1/10W
R661	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R662	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R663	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R664	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R665	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R666	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R667	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R668	QRSA08J-153YN	RESISTOR	15KΩ,1/10W
R669	QRSA08J-333YN	RESISTOR	33KΩ,1/10W
R670	QRD161J-103	RESISTOR	10KΩ,1/6W
R671	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R672	QRSA08J-183YN	RESISTOR	18KΩ,1/10W
R673	QRD161J-103	RESISTOR	10KΩ,1/6W
R676	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
R677	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
R682	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
R683	QRD161J-333	RESISTOR	33KΩ,1/6W
R684	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
R685	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
R686	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
R689	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
R699	QRD161J-104	RESISTOR	100KΩ,1/6W
C610	PU60676-223	E CAPACITOR	0.022F,5.5V
C611	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C612	QERF0JM-107	E CAPACITOR	100μF,6.3V
C613	QCSA1HJ-270	CAPACITOR	27pF,50V
C614	QATS120-450Z	TRIM CAPACITOR,TIMER CLOCK	45pF
C615	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C616	QERF1CM-106	E CAPACITOR	10μF,16V
C617	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C619	QCC11EK-104	CAPACITOR	0.1μF,25V
C621	QERF1CM-106	E CAPACITOR	10μF,16V
L601	PELN0530-101JZ	COIL	100μH
△ CF601	PEVB0497	RESONATOR	
△ X601	PEVB0422	CRYSTAL RESONATOR	
△ TH601	PESC1041	POSI THERMISTOR	
CN601	PEMC0915-016	FFC CONNECTOR	
CN602	PU59555-4	CONNECTOR	
CN802	PEMC0979	B TO B CONNECTOR,SW/DISP	
△ CP601	ICP-N25	CIRCUIT PROTECTOR	
		– REGULATOR SECTION –	
Q801	2SC3616	TRANSISTOR	
Q802	2SD2166	TRANSISTOR	

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
Q803	2SC1740S	TRANSISTOR	
	or 2SC2785	TRANSISTOR	
Q804	DTA114ES	TRANSISTOR	
Q805	2SD2144S(UVW)	TRANSISTOR	
D802	RD5.1JSB2	DIODE	
D803	1SS133	DIODE	
R801	QRD161J-471	RESISTOR	470Ω,1/6W
R802	QRD161J-473	RESISTOR	47KΩ,1/6W
R803	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R804	QRD161J-471	RESISTOR	470Ω,1/6W
R805	QVPA606-471Z	V RESISTOR,SWD 5V	
R806	QRD161J-471	RESISTOR	470Ω,1/6W
R808	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R811	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R812	QRD161J-561	RESISTOR	560Ω,1/6W
R813	QRD161J-471	RESISTOR	470Ω,1/6W
C801	QETF0JM-107	E CAPACITOR	100μF,6.3V
C802	QETF1CM-106	E CAPACITOR	10μF,16V
C803	QETC1CM-107	E CAPACITOR	100μF,16V
C804	QETC0JM-226	E CAPACITOR	22μF,6.3V
C805	QEKF0JM-107	E CAPACITOR	100μF,6.3V
C806	QFLA1HJ-102Z	M CAPACITOR, J400E	0.001μF,50V
C806	QFV21HJ-103	MM CAPACITOR, J400EG	0.01μF,50V
C807	QFV11HJ-104	MM CAPACITOR, J400EG	0.1μF,50V
L801	PU48530-101K	COIL	100μH
L802	PELN0898-5R6KL	COIL, J400EG	
CN801	PEMC0974	B TO B CONNECTOR,REG	
CN810	PEMC0979	B TO B CONNECTOR,SW/JACK	

– TERMINAL SECTION –

Q701	2SB810H,J	TRANSISTOR	
D701	1SS133	DIODE	
D702	1SS133	DIODE	
D703	1SS133	DIODE	
R701	QRSA08J-393YN	RESISTOR	39KΩ,1/10W
R702	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R703	QRSA08J-750YN	RESISTOR	75Ω,1/10W
R704	QRD161J-682	RESISTOR	6.8KΩ,1/6W
R705	QRSA08J-682YN	RESISTOR	6.8KΩ,1/10W
R706	QRG01DJ-331X	OMF RESISTOR	330Ω,1W
C701	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C702	QETF1CM-476	E CAPACITOR	47μF,16V
C704	QCYA1HK-122	CAPACITOR, J400EG	0.0012μF,50V
C705	QCYA1HK-561	CAPACITOR, J400EG	560pF,50V
C706	QCYA1HK-561	CAPACITOR, J400EG	560pF,50V
C710	QCBB1HJ-101	CAPACITOR, J400EG	100pF,50V
L701	PU48530-100K	COIL	10μH
L702	PU59152-100J	COIL	10μH
L707	PU59152-3R3J	COIL, J400EG	3.3μH
L708	PU59152-3R3J	COIL, J400EG	3.3μH
L709	PU59152-1R0J	COIL, J400EG	1μH
L710	PU59152-R33K	COIL, J400EG	0.33μH
L711	PU59152-2R2J	COIL, J400EG	2.2μH
K1	PU60281-3	FERRATE BEADS	

#△ REF No.	PART No.	PART NAME, DESCRIPTION	

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VIDEO UNIT BOARD ASSEMBLY <05>

PWBA	PB10745A-02	VIDEO UNIT BOARD ASSY	
IC1	TL8839P	IC	
IC2	JCP0035	IC	
Q1	2SA1576(QRS)	TRANSISTOR	
Q2	2SC4081(QRS)	TRANSISTOR	
Q3	2SA1576(QRS)	TRANSISTOR	
Q4	2SC4081(QRS)	TRANSISTOR	
Q5	2SC4081(QRS)	TRANSISTOR	
Q6	2SC4081(QRS)	TRANSISTOR	
Q7	2SC4081(QRS)	TRANSISTOR	
Q8	DTC114WU	TRANSISTOR	
Q9	2SC4081(QRS)	TRANSISTOR	
Q10	2SA1576(QRS)	TRANSISTOR	
Q11	DTC144WU	TRANSISTOR	
Q12	DTC144WU	TRANSISTOR	
Q13	DTA124EU	TRANSISTOR	
Q14	2SA1576(QRS)	TRANSISTOR	
Q15	2SC4081(QRS)	TRANSISTOR	
D1	1SS133	DIODE	
D2	1SS133	DIODE	
D3	1SS133	DIODE	
D4	1SS133	DIODE	
D5	1SS133	DIODE	
D7	1SS292	DIODE	
R1	NRSA63J-681N	RESISTOR	680Ω,1/16W
R2	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
R3	NRSA63J-361N	RESISTOR	360Ω,1/16W
R4	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R5	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R6	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
R7	NRSA63J-681N	RESISTOR	680Ω,1/16W
R8	QRS188J-102YN	RESISTOR	1KΩ,1/8W
R9	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R10	NRSA63J-621N	RESISTOR	620Ω,1/16W
R11	NRSA63J-331N	RESISTOR	330Ω,1/16W
R12	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R13	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R14	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R15	NRSA63J-221N	RESISTOR	220Ω,1/16W
R16	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R17	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R18	NVP1301-152N	V RESISTOR,N C BALANCE	
R19	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R20	NRSA63J-681N	RESISTOR	680Ω,1/16W
R21	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R22	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R23	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R24	NRSA63J-821N	RESISTOR	820Ω,1/16W
R25	NVP1301-472N	V RESISTOR,PB Y LEVEL	
R26	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R27	NRSA63J-561N	RESISTOR	560Ω,1/16W
R28	NVP1301-223N	V RESISTOR,CARRIER	
R29	NVP1301-103N	V RESISTOR,DEVIATION	
R30	NRSA63J-432N	RESISTOR	4.3KΩ,1/16W
R31	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R32	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R33	NRSA63J-561N	RESISTOR	560Ω,1/16W
R34	NRSA63J-102N	RESISTOR	1KΩ,1/16W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R35	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R36	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R37	NRSA63G-511N	RESISTOR	510Ω,1/16W
R38	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R39	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R40	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R41	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R42	NVP1301-153N	V RESISTOR,EE Y LEVEL	
R43	NRSA63J-823N	RESISTOR	82KΩ,1/16W
R44	NRSA63J-334N	RESISTOR	330KΩ,1/16W
R45	NVP1301-103N	V RESISTOR,W/D CLIP	
R46	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R47	NRSA63J-434N	RESISTOR	430KΩ,1/16W
R48	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R49	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R50	NRSA63J-331N	RESISTOR	330Ω,1/16W
R51	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R52	NVP1301-222N	V RESISTOR,REC COLOR LEVEL	
R53	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R54	NRSA63J-271N	RESISTOR	270Ω,1/16W
R55	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R56	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R57	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R58	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R59	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R60	NRSA63J-132N	RESISTOR	1.3KΩ,1/16W
C1	NCS31HJ-221A	CAPACITOR	220pF,50V
C2	NCS31HG-561A	CAPACITOR	560pF,50V
C3	NCS31HG-361A	CAPACITOR	360pF,50V
C4	NCS31HJ-220A	CAPACITOR	22pF,50V
C5	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C6	NCS31HJ-150A	CAPACITOR	15pF,50V
C7	NCS31HJ-220A	CAPACITOR	22pF,50V
C8	NCS31HJ-680A	CAPACITOR	68pF,50V
C9	NCS31HG-121A	CAPACITOR	120pF,50V
C10	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C11	NCF31CZ-473A	CAPACITOR	0.047μF,16V
C12	QETC1HM-474	E CAPACITOR	0.47μF,50V
C13	QCVB1CN-103	CAPACITOR	0.01μF,16V
C14	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C15	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C16	NCS31HJ-390A	CAPACITOR	39pF,50V
C17	NCS31HJ-180A	CAPACITOR	18pF,50V
C18	NCS31HJ-220A	CAPACITOR	22pF,50V
C19	QETC0JM-476	E CAPACITOR	47μF,6.3V
C20	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C21	NCS31HJ-330A	CAPACITOR	33pF,50V
C22	QETC1HM-474	E CAPACITOR	0.47μF,50V
C24	QETC1EM-475	E CAPACITOR	4.7μF,25V
C25	QETC1CM-106	E CAPACITOR	10μF,16V
C26	QETC1AM-226	E CAPACITOR	22μF,10V
C27	QETC1CM-106	E CAPACITOR	10μF,16V
C28	QETC0JM-107	E CAPACITOR	100μF,6.3V
C29	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C30	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C31	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C32	QETC1HM-225	E CAPACITOR	2.2μF,50V
C33	QETC1HM-474	E CAPACITOR	0.47μF,50V
C34	NCS31HJ-620A	CAPACITOR	62pF,50V
C35	NCS31HG-201A	CAPACITOR	200pF,50V
C36	QETC1EM-475	E CAPACITOR	4.7μF,25V
C37	NCB31EK-223A	CAPACITOR	0.022μF,25V

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
C38	NCS31HG-130A	CAPACITOR	13pF,50V
C39	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C40	QETC1HM-105	E CAPACITOR	1μF,50V
C41	NCB31EK-223A	CAPACITOR	0.022μF,25V
C42	NCS31HJ-101A	CAPACITOR	100pF,50V
C43	NCS31HJ-390A	CAPACITOR	39pF,50V
C44	QENC1EM-475	NP E CAPACITOR	4.7μF,25V
C45	QETC1EM-475	E CAPACITOR	4.7μF,25V
C46	NCF31CZ-473A	CAPACITOR	0.047μF,16V
C47	QETC1HM-104	E CAPACITOR	0.1μF,50V
C48	QETC1HM-474	E CAPACITOR	0.47μF,50V
C49	NCB31CK-333A	CAPACITOR	0.033μF,16V
C50	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C51	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C52	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C53	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C54	NCB31CK-473A	CAPACITOR	0.047μF,16V
C55	QETC1EM-475	E CAPACITOR	4.7μF,25V
C56	NCS31HJ-5R0A	CAPACITOR	5pF,50V
C57	QETC1HM-105	E CAPACITOR	1μF,50V
C58	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C59	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C60	QETC0JM-107	E CAPACITOR	100μF,6.3V
C61	NCB31HK-103A	CAPACITOR	0.01μF,50V
C62	NCB31HK-182A	CAPACITOR	0.0018μF,50V
C63	NCS31HJ-300A	CAPACITOR	30pF,50V
C64	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C65	NCB31CK-473A	CAPACITOR	0.047μF,16V
C69	NCB31EK-103A	CAPACITOR	0.01μF,25V
C70	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C71	NCF31CZ-104A	CAPACITOR	0.1μF,16V
L1	PU59152-121J	COIL	120μH
L2	PU59152-330J	COIL	33μH
L3	PU59152-330J	COIL	33μH
L4	PU59152-820J	COIL	82μH
L5	PU59152-221J	COIL	220μH
L6	PU59153-101K	COIL	100μH
L7	PU59152-680J	COIL	68μH
L8	PU48530-101K	COIL	100μH
L9	PU59152-121J	COIL	120μH
L10	PU59152-150J	COIL	15μH
L11	PU48530-561J	COIL	560μH
L12	PU59152-680J	COIL	68μH
LPF1	PELN0477	LOW PASS FILTER	
LPF2	PELN0656	LOW PASS FILTER	
DL1	PEVB0515	COMB FILTER	
△ X1	PEVB0386	CRYSTAL RESONATOR	
CN1	PEMC0712-111	PIN HEADER	
CN2	PEMC0712-112	PIN HEADER	
CN3	PEMC0712-111	PIN HEADER	

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AUDIO/CONTROL HEAD BOARD ASSY <12>

PWBA	PB40069	AUDIO CONTROL HEAD BOARD
CN1	PU60910-107	WIRE TRAP

#△	REF No.	PART No.	PART NAME, DESCRIPTION	

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FRONT BOARD ASSEMBLY <28>

	PWBA1	PB10729D1	FRONT BOARD ASSY	
△	IC1	UPD16311GC(K)	IC	
△		or UPD16311GC(E)	IC	
	IC2	GP1U581X	IR DETECT UNIT	
		or HC-377J	IR DETECT UNIT	
	D1	1SS132	DIODE	
	D2	1SS132	DIODE	
	D3	1SS132	DIODE	
	D4	1SS132	DIODE	
	D5	1SS132	DIODE	
	D7	1SS132	DIODE	
	D11	RD9.1ES-T1B2	ZENER DIODE	
	D13	1SS132	DIODE	
	R1	QRD161J-333	RESISTOR	33KΩ,1/6W
	R2	QRD161J-333	RESISTOR	33KΩ,1/6W
	R3	QRD161J-333	RESISTOR	33KΩ,1/6W
	R4	QRD161J-333	RESISTOR	33KΩ,1/6W
	R5	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R6	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R7	QRD161J-102	RESISTOR	1KΩ,1/6W
	R8	QRD161J-333	RESISTOR	33KΩ,1/6W
	R9	QRD161J-103	RESISTOR	10KΩ,1/6W
	R10	QRD161J-103	RESISTOR	10KΩ,1/6W
	R11	QRD161J-331	RESISTOR	330Ω,1/6W
	RA1	QRB045J-333XF	RESISTOR ARRAY	33KΩ,4W
	C1	QETC0JM-336	E CAPACITOR	33μF,6.3V
	C3	QETC1HM-106	E CAPACITOR	10μF,50V
	C4	QCSB1HJ-330	CAPACITOR	33pF,50V
	C5	QCSB1HJ-330	CAPACITOR	33pF,50V
	C6	QETB1AM-227	E CAPACITOR	220μF,10V
	L1	PU48530-101J	COIL	100μH
	S2	PESW0525-02Z	TACT SWITCH,REC/ITR	
	S3	PESW0525-02Z	TACT SWITCH,PAUSE	
	S5	PESW0525-02Z	TACT SWITCH,PLAY	
	S6	PESW0525-02Z	TACT SWITCH,STOP	
	S9	PESW0525-02Z	TACT SWITCH,SP/LP	
	S30	PESW0525-02Z	TACT SWITCH,A.DUB	
	FDP1	PEDP0098	FLUORESCENT DISPLAY PANEL	
	HD1	PQ34668	FDP HOLDER(L)	
	HD2	PQ34669	FDP HOLDER(R)	
	CN1	PEMC0979	B TO B CONNECTOR,MAIN-DISP	
	CN2	PEMC0724-009	B TO B CONNECTOR	

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SWITCH/JACK BOARD ASSEMBLY <36>

PWBA1	PB10729A2-01	SW/JACK BOARD ASSY	
D12	SLH-34VC3F	LE DIODE,POWER	
D201	1SS133	DIODE	
D202	1SS133	DIODE	
R201	QRD161J-750	RESISTOR	75Ω,1/6W
S1	PESW0525-02Z	TACT SWITCH,CH+	
S4	PESW0525-02Z	TACT SWITCH,CH−	
S10	PESW0525-02Z	TACT SWITCH,CANCEL	

#△	REF No.	PART No.	PART NAME, DESCRIPTION
	S11	PESW0525-02Z	TACT SWITCH,TIMER
	S12	PESW0525-02Z	TACT SWITCH,OPERATE
	S13	PESW0525-02Z	TACT SWITCH,START TIME
	S14	PESW0525-02Z	TACT SWITCH,START TIME
	S15	PESW0526-02Z	TACT SWITCH,STOP TIME+
	S16	PESW0525-02Z	TACT SWITCH,STOP TIME−
	HD3	PQM30038-1-2	LED HOLDER,FOR D12
	JA1	PEMC0999	JACK UNIT
	CN3	PEMC0723-009	B TO B CONNECTOR
	CN4	PEMC0979	B TO B CONNECTOR

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PRE/REC AMP BOARD ASSEMBLY <43>

PWBA2	PB10756C2	PRE/REC BOARD ASSEMBLY	
IC501	AN3389SB-XE	IC	
Q503	2SC4081(QRS)	TRANSISTOR	
Q504	2SC4081(QRS)	TRANSISTOR	
Q505	2SA1576(QRS)	TRANSISTOR	
Q506	2SC4081(QRS)	TRANSISTOR	
Q507	2SC4081(QRS)	TRANSISTOR	
Q508	DTC144WU	TRANSISTOR	
Q512	DTC114WU	TRANSISTOR	
Q514	DTA124EU	TRANSISTOR	
D501	1SS133	DIODE	
D502	1SS133	DIODE	
D505	1SS133	DIODE	
D508	DAN202U	DIODE	
R501	QRSA08J-272YN	RESISTOR	2.7KΩ,1/10W
R509	QRSA08J-182YN	RESISTOR	1.8KΩ,1/10W
R510	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R514	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R515	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R516	QRSA08J-751YN	RESISTOR	750Ω,1/10W
R517	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R518	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R519	QRSA08J-391YN	RESISTOR	390Ω,1/10W
R520	QRSA08J-391YN	RESISTOR	390Ω,1/10W
R521	QRSA08J-911YN	RESISTOR	910Ω,1/10W
R522	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R523	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R524	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R525	QRSA08J-152YN	RESISTOR	1.5KΩ,1/10W
R526	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
R527	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R528	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
R531	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R532	QRSA08J-182YN	RESISTOR	1.8KΩ,1/10W
R535	QRSA08J-822YN	RESISTOR	8.2KΩ,1/10W
R536	NRVA62D-433N	RESISTOR	43KΩ,1/16W
R539	QRD161J-334	RESISTOR	330KΩ,1/6W
R541	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R542	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R543	QRSA08J-301YN	RESISTOR	300Ω,1/10W
R544	QRSA08J-301YN	RESISTOR	300Ω,1/10W
R545	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R548	QRSA08J-154YN	RESISTOR	150KΩ,1/10W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R550	QRSA08J-181YN	RESISTOR	180Ω,1/10W
R552	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R554	QRD161J-331	RESISTOR	330Ω,1/6W
C504	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C505	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C506	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C507	QCSA1HJ-331	CAPACITOR	330pF,50V
C508	QCSA1HJ-150	CAPACITOR	15pF,50V
C509	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C510	QCSA1HJ-330	CAPACITOR	33pF,50V
C511	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C512	QCSA1HJ-390	CAPACITOR	39pF,50V
C513	QCSA1HJ-471	CAPACITOR	470pF,50V
C514	QCSA1HJ-160	CAPACITOR	16pF,50V
C515	QCSA1HJ-7R0	CAPACITOR	7pF,50V
C516	QCC11CJ-104	CAPACITOR	0.1μF,16V
C517	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C518	QCSA1HJ-391	CAPACITOR	390pF,50V
C521	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C522	QFV11HJ-104	F CAPACITOR	0.1μF,50V
C523	QCYA1HK-333	CAPACITOR	0.033μF,50V
C524	QCSA1HJ-680	CAPACITOR	68pF,50V
C525	QCSA1HJ-560	CAPACITOR	56pF,50V
C526	QCYA1HK-333	CAPACITOR	0.033μF,50V
C527	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C528	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C529	QCYA1HK-333	CAPACITOR	0.033μF,50V
C530	QCSA1HJ-680	CAPACITOR	68pF,50V
C531	QCSA1HJ-560	CAPACITOR	56pF,50V
C532	QCYA1HK-333	CAPACITOR	0.033μF,50V
C533	QFV11HJ-104	F CAPACITOR	0.1μF,50V
C534	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C535	QCC11CJ-104	CAPACITOR	0.1μF,16V
C536	QER61CM-476	E CAPACITOR	47μF,16V
C537	QER60JM-476	E CAPACITOR	47μF,6.3V
C539	QFV11HJ-103	F CAPACITOR	0.01μF,50V
C540	QCSA1HJ-470	CAPACITOR	47pF,50V
C541	QCSA1HJ-390	CAPACITOR	39pF,50V
C543	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C545	QCVB1CN-103	CAPACITOR	0.01μF,16V
C549	QCFA1EZ-224	CAPACITOR	0.22μF,25V
C550	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C554	QCFA1HZ-103	CAPACITOR	0.01μF,50V
L501	PU54223-470J	COIL	47μH
L503	PU54223-101K	COIL	100μH
L504	PU59152-560J	COIL	56μH
L505	PU59152-220J	COIL	22μH
L506	PU59152-470J	COIL	47μH
L507	PU59152-470J	COIL	47μH
L508	PU59152-121J	COIL	120μH
L509	PU59152-330J	COIL	33μH
L510	PU59152-180J	COIL	18μH
BKT1	PQ21512	S.FRAME(PRE.)	
SPC1	PQM30029-210	SPACER	
CN501	PEMC0976-118	B TO B CONNECTOR	
CN502	PEMC1004-006	CONNECTOR	

#△ REF No.	PART No.	PART NAME, DESCRIPTION	

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DECK TERMINAL BOARD ASSEMBLY <51>

PWBA1	PB10718A1-04	DECK TERMINAL BOARD ASSEMBLY	
Q3	PT491F	END SENSOR	
D1	SIR-381SB3FM	LE DIODE	
D2	RD6.2ES-T1B2	ZENER DIODE	
R1	QRD161J-102	RESISTOR	1KΩ,1/6W
R3	QRD161J-331	RESISTOR	330Ω,1/6W
R4	QRD161J-820	RESISTOR	82Ω,1/6W
C1	QCVB1CM-103	CAPACITOR	0.01μF,16V
L1	PELN0530-101JW	COIL	100μH
PS1	PS5705HR	PH INTERRUPTER	
CN1	PEMC0915-016	FFC CONNECTOR	
CN2	PU60642	7PIN CONNECTOR	
CN3	PU60640	4PIN CONNECTOR	
CN4	PU60910-4	CONNECTOR	

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LOADING MDA BOARD ASSEMBLY <55>

PWBA2	PB10718A2-01	LOADING MDA BOARD ASSEMBLY	
△ IC1	BA6418N	IC	
C1	QETA1CM-227	E CAPACITOR	220μF,16V
CN1	PU60910-104	WIRE TRAP	

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CASSETTE HOUSING BOARD <56>

PWBA1	PB10718A3-01	CASSETTE HOUSING BOARD ASSY	
Q2	PN268VI	PHOTO TRANSISTOR	
C1	QCVB1CN-103	CAPACITOR	0.01μF,16V
S1	PESW0589	PUSH SWITCH	
CN2	PU60639	4PIN SOCKET	

SECTION 6
TECHNICAL INFORMATIONS

6.1 MECHACON CIRCUIT

6.1.1.Mechacon CPU pin function (IC601) 1/2

PIN NO.	LABEL	IN/OUT	NOTE
1	NC	-	NC
2	P DOWN	IN	POWER DOWN DETECT (POWER DOWN:H → L)
3	NC	-	NC
4	AVG FM	IN	Auto tracking data (Average voltage of PB FM level) input
5	AVss	-	GND
6	TEST	-	NC
7	X2	-	MAIN SYSTEM CLOCK
8	X1	-	(10.0MHz)
9	Vss	-	GND
10	OSC1	IN	SUB SYSTEM CLOCK
11	OSC2	OUT	(32.786kHz)
12	RESET	IN	RESET AT CONNECT VCR TO AC
13	(NMI)	-	GND
14	YNR CTL	OUT	Picture control (YNR CTL: L)
15	PB SPCL	OUT	Special PB mode: L
16	P MUTE	OUT	Picture mute control (Mute on: L)
17	SYNC D	IN	Sync detect (No sync: H)
18	LOCKDE	IN	Tuning lock check
19	REC	OUT	REC mode: H
20	EE	OUT	EE Mode: L
21	REC ST	OUT	REC START : H
22	CTL P	IN	CONTROL PULSE INPUT (MODE DETECT/TRACKING CONTROL)
23	TU FG	IN	Tack-up reel rotation detect / tape remaining time detect
24	N.C	-	NC
25	A REC	OUT	AUDIO REC: H
26	A EE	OUT	AUDIO EE: L
27	SEL CTL	OUT	MODE SELECT (SP: L/LP: M/EP: H)
28	A MUTE	OUT	AUDIO mute control (Mute on: H)
29	F.E ON	OUT	F.E HEAD Control (ON: H)
30	PBL/PB	OUT	PB MODE : H (RF CONV ON/OFF CONTROL)
31	H SEL	OUT	Head select control (SP:L/LP:M)
32	A/M/S	OUT	PRE/REC circuit control (Auto:M/Manual:H/slow & Still:L)
33	MCE	OUT	MEMORY IC CHIP ENABLE
34	TU CTL	OUT	TUNER mode: H
35	PLL DA	OUT	Tuning control serial data output
36	S-CLK	OUT	Serial data shift clock output
37	SERVO	OUT	Capstan motor control (Servo CTL: L / Mechacon CTL: H)
38	PAUSE	OUT	Capstan motor control (PAUSE: L)
39	START	IN	Leader tape detect (Detect on: L)
40	CASS	IN	Cassette sensor (Sensor on: L)

Table 6-1-1-A MECHACON CPU pin function (1/2)

6.1.2 Mechacon CPU pin function (IC601) 2/2

PIN NO.	LABEL	IN/OUT	NOTE
41	LSA	IN	Mechanism mode detect (SW A)
42	LSB	IN	Mechanism mode detect (SW B)
43	REC SF	IN	REC safety switch detect (SW on: L)
44	END S	IN	Trailer tape detect (Detect on: L)
45	VP CTL	OUT	V.pulse addition timing control
46	CAP REV	OUT	Capstan motor control (FWD: H / REV: L)
47	NC	-	NC
48	CCIR	OUT	CCIR: L
49	NTSC	-	NC
50	RC IN	IN	Remote control data input
51	V MUTE	OUT	Video mute control (Mute on: H)
52	LP SPCL	OUT	LP SPECIAL PB mode: H
53	SDA	OUT	SERIAL DATA OUTPUT(for Programming Control)
54	SCL	OUT	DATA TRANSFER CLOCK
55	LCM1	OUT	Loading motor control (1)
56	LCM2	OUT	Loading motor control (2)
57	S-OUT	OUT	On screen control data
58	S-IN	IN	/ FDP Control data output
59	S-CLK	OUT	Data transfer clock
60	SERVO	OUT	Servo IC control data
61	F-DATA	IN/OUT	Memory IC data
62	SERVO	OUT	Data transfer clock
63	VCC	-	System power
64	STB	IN	Clock output permission
65	PAUSE	-	NC
66	P CTL	OUT	Power control (POWER ON: H)
67	C PLS	IN	CONTROL PULSE IN
68	NC	-	NC
69	CAP FG	IN	Tape speed detect / Back space count
70	DUTY I		IN/OUT INDEX Data control
71	D FF	IN	DRUM ROTATION DETECT / REC Timing control
72	A VCC	-	System power (for ANALOG)
73	NC	-	GND
74	PROTEC	IN	Power protect detect (POWER OFF: L)
75	DRUM V	OUT	Drum motor control (fh CORRECTION)
76	CAP V	OUT	Capstan motor control
77	JSA	IN	Jog dial pulse input
78	JSB	IN	Jog dial pulse input
79	STL	IN	Shuttle switch
80	NC	-	NC

Table 6-1-1-B MECHACON CPU pin function (2/2)

6.2 TIMER CIRCUIT

6.2.1 Timer Cpu pin function (IC1)

PIN NO.	LABEL	IN/OUT	NOTE
1	SW1	-	GND
2	SW2	-	GND
3	SW3	-	GND
4	SW4	-	GND
5	DOUT	OUT	SERIAL DATA OUTPUT
6	DIN	IN	SERIAL DATA INPUT
7	IC	-	NC
8	CLK	IN	DATA TRANSFER CLOCK
9	STB	OUT	CLOCK OUTPUT PERMISSION
10	KEY1	IN	KEY SCAN DATA INPUT
11	KEY2	IN	
12	KEY3	IN	
13	KEY4	IN	
14	VDD	-	UNSW5V
15	S1	OUT	SEGMENT DISPLAY DATA / KEY SCAN PULSE OUTPUT
16	S2	OUT	
17	S3	OUT	
18	S4	OUT	
19	S5	OUT	
20	S6	OUT	
21	S7	OUT	
22	S8	OUT	
23	S9	OUT	
24	S10	OUT	
25	S11	OUT	
26	S12	OUT	
27	S13	OUT	
28	S14	OUT	
29	S15	OUT	
30	S16	OUT	
31	S17	-	NC
32	S18	-	NC
33	NC	-	VDD
34	VEE	-	for FDP DRIVE
35	G9	OUT	COLUMN DISPLAY DATA OUTPUT (GRID CONTROL)
36	G8	OUT	
37	G7	OUT	
38	G6	OUT	
39	G5	OUT	
40	G4	OUT	
41	G3	OUT	
42	G3	OUT	
43	G2	OUT	
44	G1	OUT	

Table 6-2-1-A TIMER CPU pin function (1/2)

PIN NO.	LABEL	IN/OUT	NOTE
45	VDD	-	VDD
46	LED5	-	NC
47	LED4	-	NC
48	LED3	-	NC
49	LED2	-	NC
50	POWER	OUT	LED CONTROL (LED ON: H)
51	VSS	-	GND
52	OSC	-	NOT USED

Table 6-2-1-B TIMER CPU pin function (2/2)